RCD-W222ES

SERVICE MANUAL

US Model

CD-R section	Model Name Using Similar Mechanism	NEW
	CD Mechanism Type	CDM65-RBD1
	Base Unit Name	RBD1
	Optical Pick-up Name	KRS-220C
CDP section	Model Name Using Similar Mechanism	NEW
	CD Mechanism Type	CDM53L-30B61B
	Base Unit Name	BU-30BBD61B
	Optical Pick-up Name	A-MAX.3

SPECIFICATIONS

DECK A (the CD player section)

System — Compact disc digital audio system
Laser — Semiconductor laser (λ =780 nm)
Emission duration: continuous
Frequency response — 20 Hz – 20,000 Hz (±0.5 dB)
Wow and flatter — Below measurable limit

DECK B (the CD-R and CD-RW recording section)

System — Compact disc digital audio system
Laser — Semiconductor laser (λ =780 nm)
Emission duration: continuous
Playable discs — CD, CD-R, CD-RW
Recordable discs — CD-R, CD-RW (for music use)
Frequency response — 20 Hz - 20,000 Hz (±0.5 dB)
Wow and flatter — Below measurable limit

Inputs

ANALOG IN
(Phono jacks) — Impedance: 47 kilohms
Rated input: 500 mVrms
Minimum input: 250 mVrms

DIGITAL OPTICAL IN
(Square optical connector jack) — Optical wavelength: 660nm

DIGITAL COAXIAL IN
(Phono jack) — Impedance: 75 ohms
Rated input: 0.5 Vp-p,± 20 %

Outputs

ANALOG OUT
(Phono jacks) — Impedance: 47 kilohms
Rated output: 2 Vrms
Load impedance: over 10 kilohms

DIGITAL OPTICAL OUT
(Square optical connector jack) — Optical wavelength: 660nm
Rated output: –18 dBm

DIGITAL COAXIAL OUT
(Phono jack) — Rated output: 0.5 Vp-p, ± 20 %
Load impedance: 75 ohms

PHONES
(Stereo phono jack) — Rated output: 28mW
Load impedance: 32 ohms

General

Power requirements — 120 V AC, 60 Hz
Power consumption — 29 W
Dimensions (approx.) (w/h/d) incl. projecting parts and control
430 x 110 x 400 mm
(17 x 4 ^{3}/$_8$ x 15 ^{3}/$_4$ inch)
Mass (approx.) — 7.5 kg (16 ^{1}/$_2$ lbs)

Supplied accsessories
• Audio connecting cords
  Phono jack x 2 (red/white) ←→ Phono jack x 2 (red/white) (2)
• Remote commander (remote) (1)
• Size AA (R6) batteries (2)

Design and specifications are subject to change
without notice.

COMPACT DISC RECORDER

SONY

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

CAUTION
The use of optical instruments with this product will increase eye hazard. As the laser beam used in this Compact Disc Recorder is harmful to eyes, do not attempt to disassemble the cabinet.
Refer servicing to qualified personnel only.

The following caution label is located inside the apparatus.

DANGER	DANGER
INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK DEFEATED. AVOID DIRECT EXPOSURE TO BEAM.	RADIATION DE LESER INVISIBLE LORS D'OUVERTURE. AVEC L'ENCLENCHEMENT DE SECURITE ANNULE. EVITER L'EXPOSITION DIRECTE .AU RAYON.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Notes on chip component replacement
• Never reuse a disconnected chip component.
• Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing
• Keep the temperature of soldering iron around 270°C during repairing.
• Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
• Be careful not to apply force on the conductor when soldering or unsoldering.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE
The AC leakage from any exposed metal part to earth Ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.
1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)
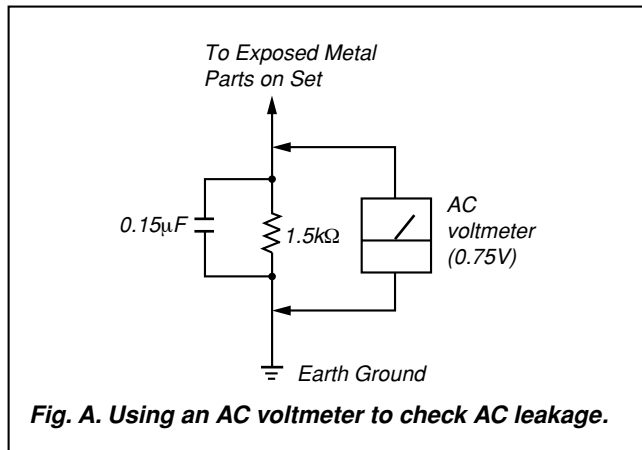

Fig. A. Using an AC voltmeter to check AC leakage.

SELF-DIAGNOSIS FUNCTION

When the self-diagnosis function is activated to prevent the player from malfunctioning, three character service numbers in a combination with a message appears in the display. In this case, check the following table.

Message	Explanation
C12/ Cannot Copy	You are trying to record a disc that cannot be played back in DECK-A or with an external device, such as CD-ROM or VIDEO CD.
	• Remove the disc, and then insert a music CD for playback.
C13/ Rec Error	Recording has not been completed successfully because of vibration.
	• Relocate the unit in a place free of vibration and restart the recording again.
	The disc you try to record is excessively dirty (such as oilstained or finger marked) or scratched. Or the disc is not normal.
	• Replace the disc with another one and restart the recording again.
C14/ TOC Error	The unit did not read the TOC information.
	• Insert other discs.
C41/ Cannot Copy	The sound source you are trying to record is a copy of a commercial music software. Or you are trying to record on a CD-R/CD-RW digitally.
	• Because of the restriction of the Serial Copy Management System, you cannot record a copy of a commercial music software. Neither can you record a CD-R/ CD-RW digitally.
	• Use analog recording through the ANALOG IN jack when you record from other units. Or use Synchro-Recording when you record from DECK A. (The recording mode is automatically changed to analog recording.)
C71/ Din Unlock	If this message is displayed momentarily, this is not an error. It is caused by the digital signal during recording.
	During recording of a digital sound source, the connecting cable has been disconnected or the player of the sound source has turned off.
	• Connect the cable or turn on the digital player.

TABLE OF CONTENTS

SECTION 1
SERVICING NOTE

NOTES REGARDING HANDLING OF THE PICK-UP

1. Notes for transport and storage

1) The pick-up should always be left in its conductive bag until immediately prior to use.
2) The pick-up should never be subjected to external pressure or impact.

Storage in conductive bag
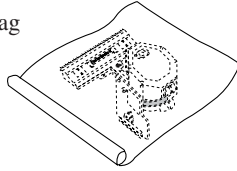
Drop impact
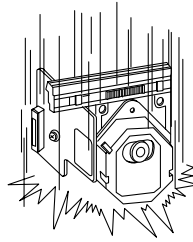
2. Repair notes

1) The pick-up incorporates a strong magnet, and so should never be brought close to magnetic materials.
2) The pick-up should always be handled correctly and carefully , taking care to avoid external pressure and impact.
   If it is subjected to pressure or impact, the result may be an operational malfunction and/or damage to the printed-circuit board.
3) Each and every pick-up is already individually adjusted to a high degree of precision, and for that reason the adjustment point and installation screws should absolutely never be touched.
4) Laser beams may damage the eyes!
   Absolutely never permit laser beams to enter the eyes!
   Also NEVER switch ON the power to the laser output part (lens, etc.) of the pick-up if it is damaged.
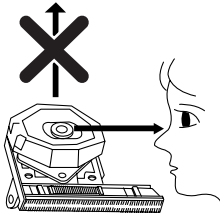
NEVER look directly at the laser beam, and don't let contact fingers or other exposed skin.

5) Cleaning the lens surface
   If there is dust on the lens surface, the dust should be cleaned away by using an air bush (such as used for camera lens). The lens is held by a delicate spring. When cleaning the lens surface, therefore, a cotton swab should be used, taking care not to distort this.

Magnet

How to hold the pick-up

Pressure

Pressure

Conductive Sheet
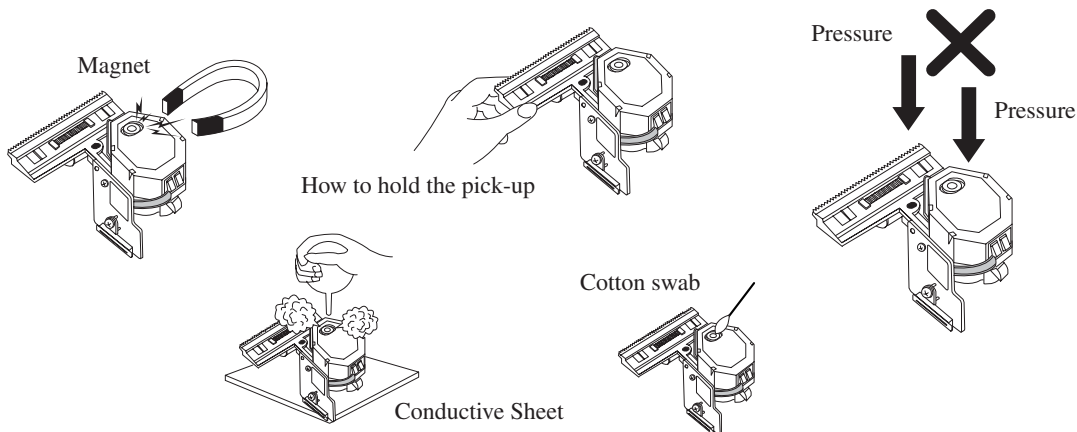
Cotton swab

6) Never attempt to disassemble the pick-up.
   Spring by excess pressure. If the lens is extremely dirty, apply isopropyl alcohol to the cotton swab. (Do not use any other liquid cleaners, because they will damage the lens.) Take care not to use too much of this alcohol on the swab, and do not allow the alcohol to get inside the pick-up.

NOTES REGARDING COMPACT DISC PLAYER REPAIRS

1. Preparations

1) Compact disc players incorporate a great many ICs as well as the pick-up (laser diode). These components are sensitive to, and easily affected by, static electricity. If such static is high voltage, components can be damaged, and for that reason components should be handled with care.

2) The pick-up is composed of many optical components and other high-precision components. Care must be taken, therefore, to avoid repair or storage where the temperature of humidity is high, where strong magnetism is present, or where there is excessive dust.

2. Notes for repair

1) Before replacing a component part, first disconnect the power supply lead wire from the unit

2) All equipment, measuring instruments and tools must be grounded.

3) The workbench should be covered with a conductive sheet and grounded.
   When removing the laser pick-up from its conductive bag, do not place the pick-up on the bag. (This is because there is the possibility of damage by static electricity.)

4) To prevent AC leakage, the metal part of the soldering iron should be grounded.

5) Workers should be grounded by an armband (1MΩ)

6) Care should be taken not to permit the laser pick-up to come in contact with clothing, in order to prevent static electricity changes in the clothing to escape from the armband.

7) The laser beam from the pick-up should NEVER be directly facing the eyes or bare skin.

Armband

Resistor (1MΩ)

Resistor (1MΩ)

Conductive Sheet
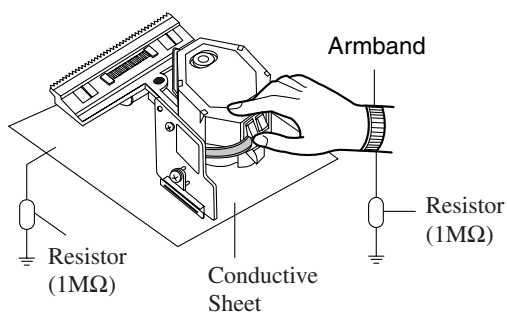
Electrostatically Sensitive Devices (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive Devices (ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.

2. After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.

3. Use only a grounded-tip soldering iron to solder or unsolder ESD devices.

4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESD devices.

5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.

6. Do not remove a replacement ESD device from its protective package until immediately before you are ready to install it. (Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).

7. Immediately before removing the protective material from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will by installed.

CAUTION :   BE SURE NO POWER IS APPLIED TO THE CHASSIS OR CIRCUIT, AND OBSERVE ALL OTHER SAFETY PRECAUTIONS.

8. Minimize bodily motions when handing unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can gen - erate static electricity sufficient to damage an ESD device).

SECTION 2
GENERAL

Parts and Controls
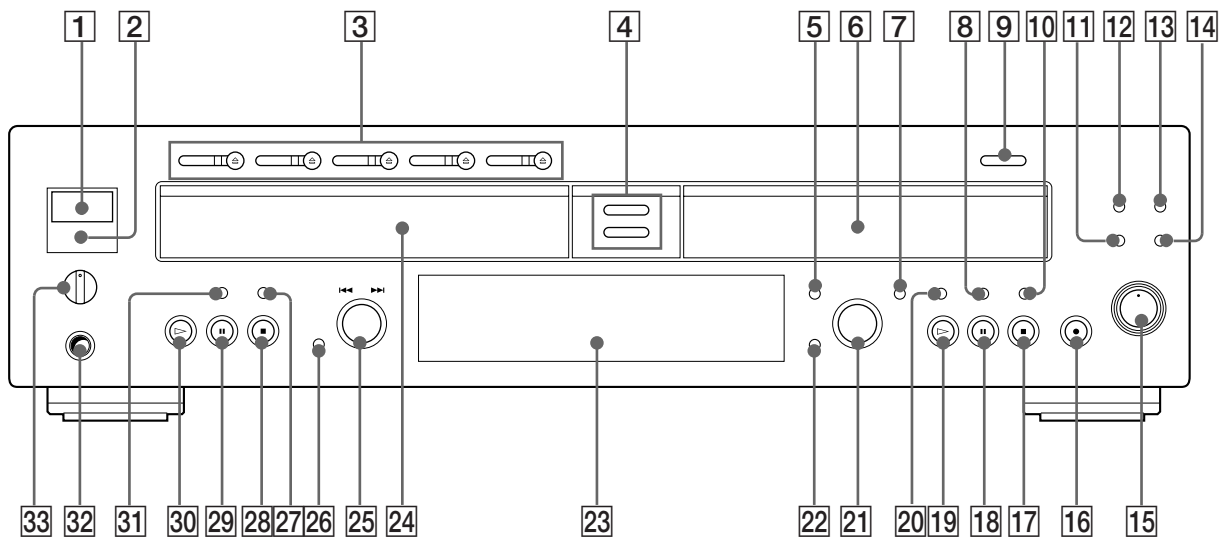
1 POWER button

2 ℝ(remote sensor)

3 DISC 1-5 ⏏ buttons

4 CD SYNCHRO NORMAL/HIGH buttons

5 MENU/NO button

6 Disc tray-Deck B

7 YES button

8 TIME-Deck B button

9 OPEN/CLOSE button -Deck B

10 PLAY MODE button -Deck B

11 INPUT button

12 FINALIZE button

13 ERASE button

14 SBM button and indicator

15 REC LEVEL knob

16 REC ● button -Deck B

17 ■ (stop) button -Deck B

18 ❚❚ (pause) button -Deck B

19 ▶ (play) button -Deck B

20 DISPLAY button

21 I◀◀ AMS ▶▶I/PUSH ENTER-Deck B

22 CLEAR-Deck B

23 Display button

24 Disc tray-Deck A

25 I◀◀ AMS ▶▶I/PUSH ENTER knob -Deck A

26 CLEAR button -Deck A

27 PLAY MODE button -Deck A

28 ■ (stop) button -Deck A

29 ❚❚ (pause) button -Deck A

30 ▶ (play) button -Deck A

31 TIME button -Deck A

32 PHONES jack

33 PHONE LEVEL knob

RCD-W222ES

SECTION 3
DISASSEMBLY

Note: Disassemble the unit in the order as shown below.

Set → Case(top) → Front panel section → POWER SW board, HP board, RM board, CD SW board, LED board and DISPLAY board

Deck A CD changer mechanism deck (CDM53L-30B61B)

CD base unit (BU-30BBD61B)

Fitting base (guide) assy, Bracket (chassis) and Magnet assy

Tray (sub)

Chassis (mold B) section, Stocker section and Slider (selection)

Deck B CD-R/CD-RW mechanism deck (CDM65-RBD1)

CD-R board, Tray and Optical pick-up block (KRM-220C)
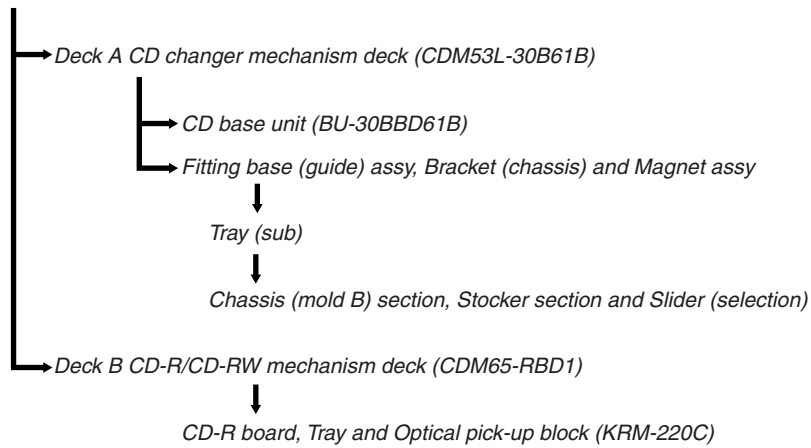
Note: Follow the disassembly procedure in the numerical order given.

3-1. CASE (TOP)

❺ Case

❶ Two screws (Flat head)

❸ Two screws (Flat head)

❹ Screw (Flat head)

❷ Two screws (Flat head)
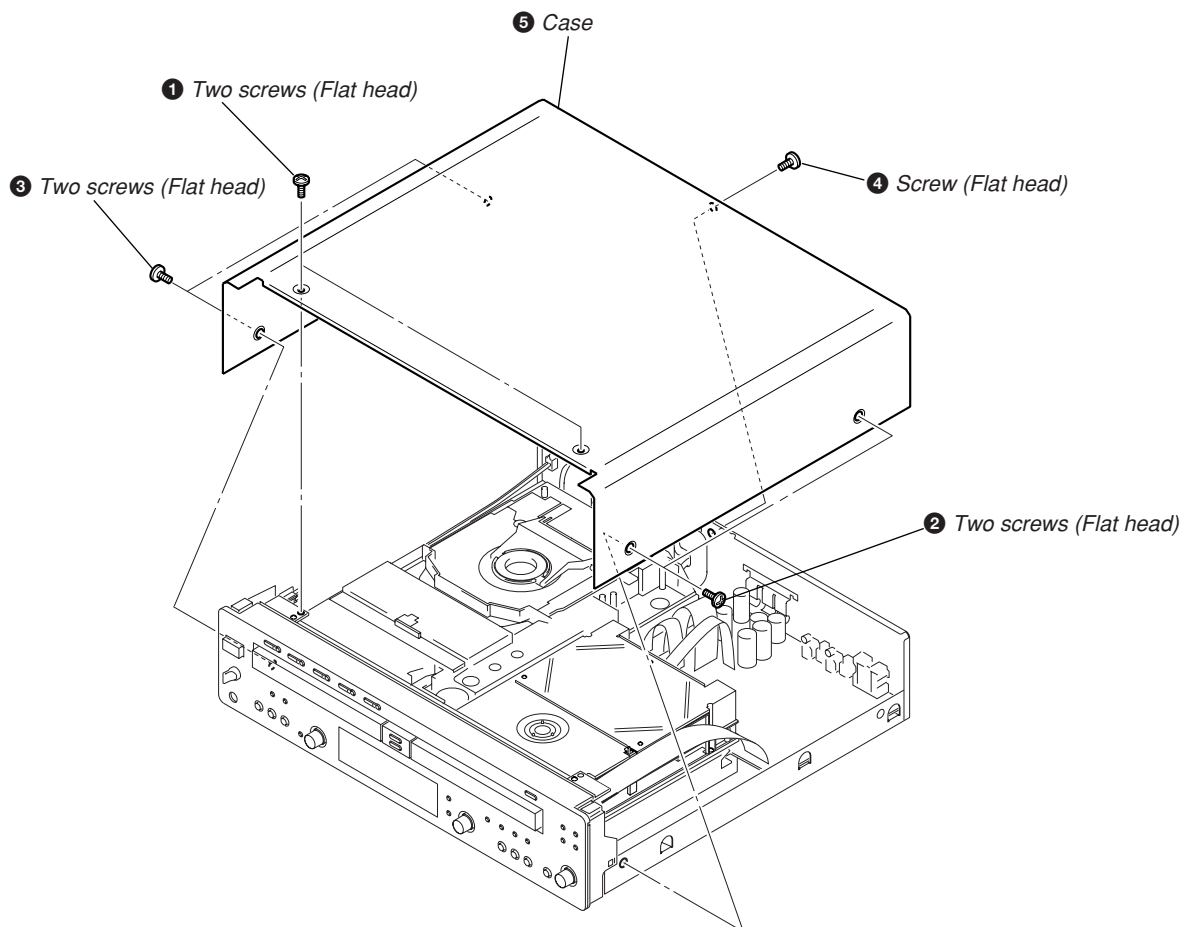
3-2. FRONT PANEL SECTION
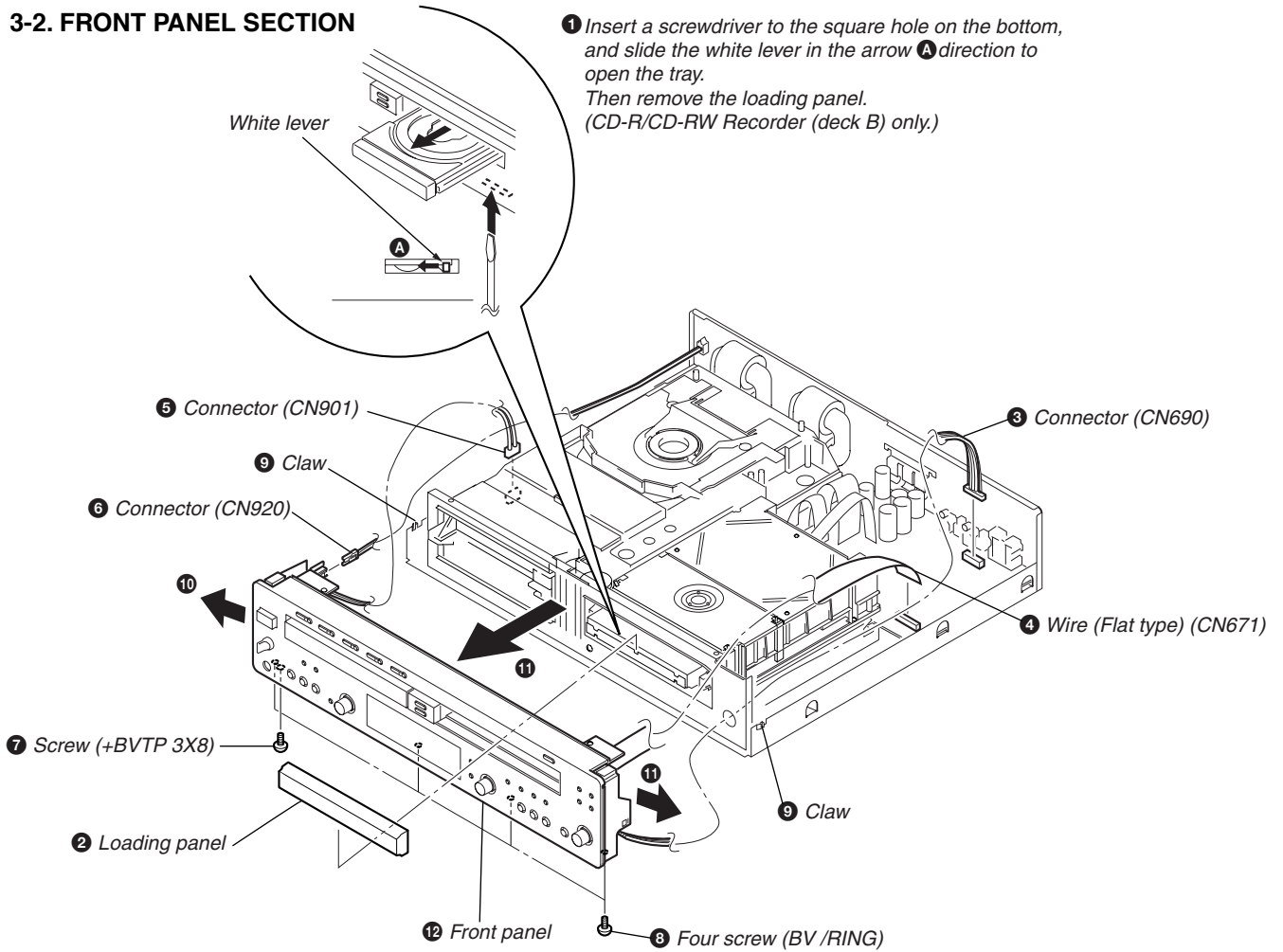
❶ *Insert a screwdriver to the square hole on the bottom, and slide the white lever in the arrow Ⓐ direction to open the tray.*
Then remove the loading panel.
(CD-R/CD-RW Recorder (deck B) only.)

White lever

Ⓐ

❺ *Connector (CN901)*

❾ *Claw*

❻ *Connector (CN920)*

❸ *Connector (CN690)*

❿

❹ *Wire (Flat type) (CN671)*

❶❶

❼ *Screw (+BVTP 3X8)*

❷ *Loading panel*

❾ *Claw*

❶❶

❶❷ *Front panel*

❽ *Four screw (BV /RING)*

3-3. POWER SW BOARD, HP BOARD, RM BOARD, LED BOARD, CD SW BOARD, DISPLAY BOARD

❾ *LED board*

❽ *RM board*

❺ *HP board*

❻ *Nineteen screws (+BVTP 2.6x8)*

❷ *Two screws (+BVTP 2.6x8)*

❸ *POWER SW board*

❹ *Two screws (+BVTP 2.6x8)*

❿ *CD SW board*

❼ *Hook*

❶❶ *DISPLAY board*

❶ *Three knobs*

3-4. DECK A (CDM53L-30B61B), DECK B (CDM65-RBD1)

❿ *Deck A CD changer mechanism deck (CDM53L-30B61B)*

❺ *Two screws (+BVTP 3x8)*

❹ *Two screws (+BVTP 3x8)*

❽ *Wire (Flat type) (23 core)*

⓰ *Connector (CN111)*

⓬ *Two screws (+BVTP 3x8)*

⓯ *Wire (Flat type) (CN110)*

❼ *Connector (CN713)*

⓭ *Two screws (+BVTP 3x8)*

⓱ *Deck B CD-R/CD-RW mechanism deck (CDM65-RBD1)*

❾ *Wire (Flat type) (CN701)*

❻

❶ *Connector (CN641)*

⓮

❷ *Wire (Flat type) (CN640)*

⓫ *Wire (Flat type) (CN630)*

❸ *Wire (Flat type) (CN660)*

3-5. CD-R BOARD, TRAY AND OPTICAL PICK-UP BLOCK (KRM-220C) (DECK B)

⓰ *Three screws (+BVTP 2.6x8)*

⓯ *Holder (MG) sub assy*

⓱ *Dust cover*

⓴ *Connector*

⓲ *Two screws (+PTP 2x9)*

⓴⓵ *Optical pick-up block (KRM-220C)*

⓮

❿ *Slide the tray out and stopped, spread the tray stoppers on both sides in the arrow direction from the bottom to release the tray.*

⓳ *Two step screws*

Tray stoppers

⓭ *Two hooks*

❽ *Hook*

Bottom view of both sides on chassis

Front

⓫

❽ *Hook*

⓭ *Two hooks*

❺ *Connector (CN102)*

❹ *Connector (CN101)*

❼ *Connector (CN104)*

❻ *Connector (CN103)*

⓬ *Tray*

❶ *Two screws (+BVTP 2.6x8)*

❸ *Bottom plate*

❾ *CD-R board*

❷ *Two screws (+BVTP 2.6x8)*

RCD-W222ES

3-6. CD BASE UNIT (BU-30BBD61B) (DECK A)

❼ *CD base unit*
(BU-30BBD61B)

❻ *Two coil springs*
(insulator)

❺ *Stopper (BU)*

❸ *Two coil springs*
(insulator)

❷ *Two screw (BVTP2.6)*

❹ *Two screw (BVTP2.6)*

❶ *Floating screw*
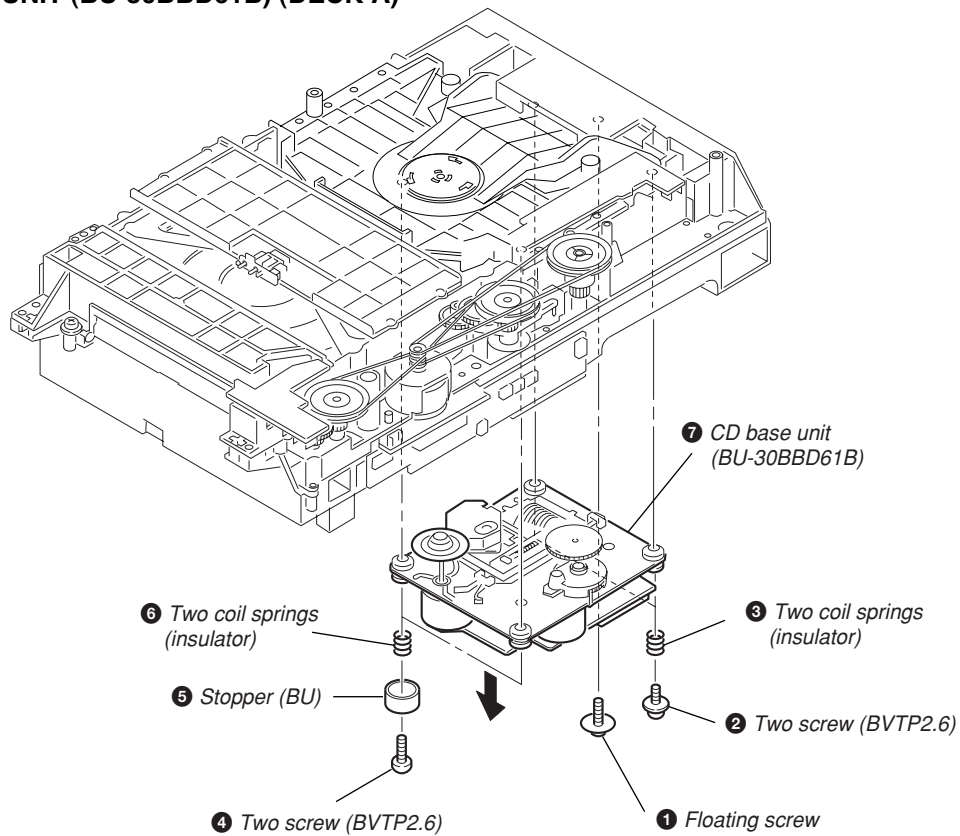
3-7. FITTING BASE (GUIDE) ASSY, BRACKET (CHASSIS) AND MAGNET ASSY (DECK A)
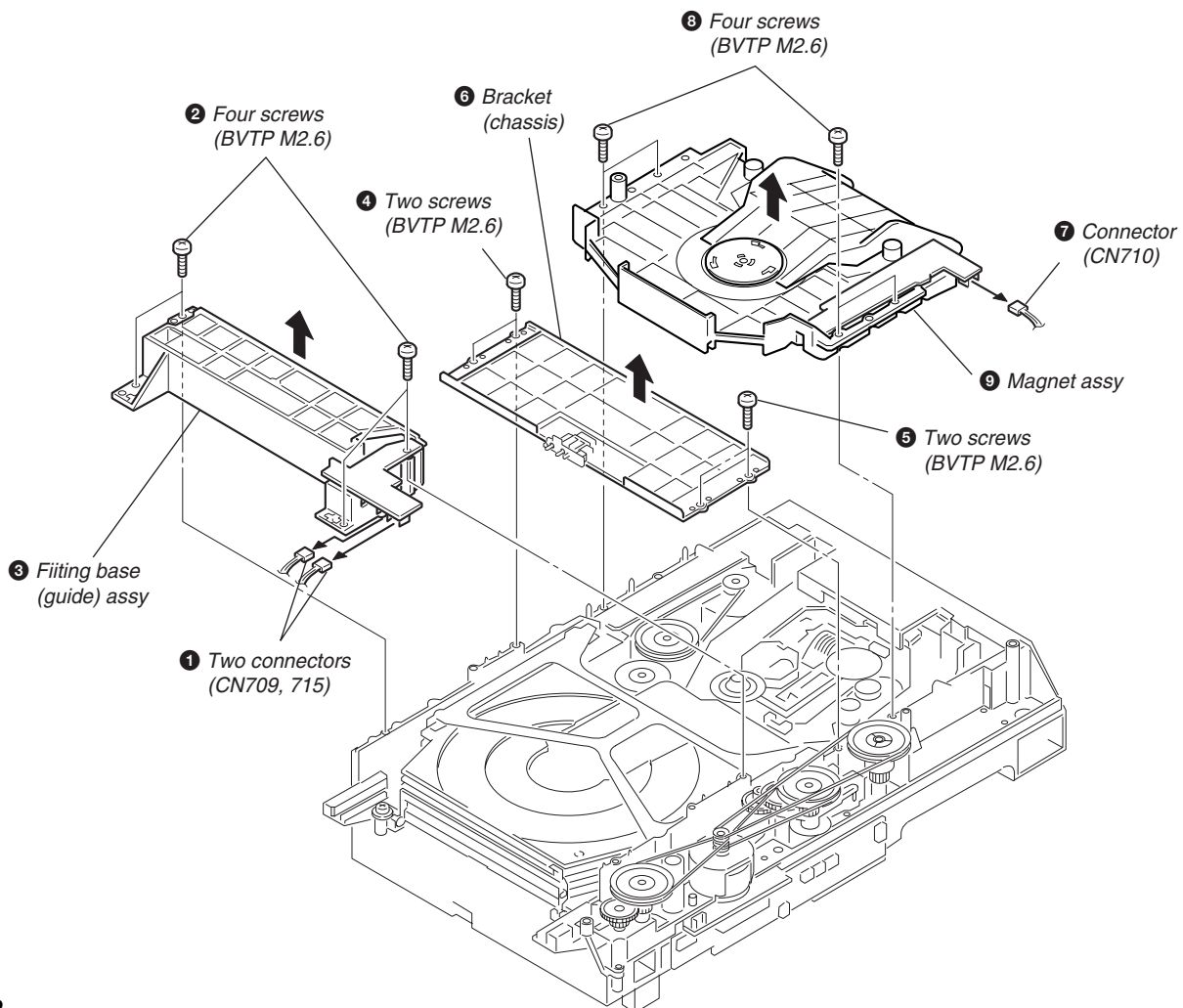
❽ *Four screws*
(BVTP M2.6)

❻ *Bracket*
(chassis)

❷ *Four screws*
(BVTP M2.6)

❹ *Two screws*
(BVTP M2.6)

❼ *Connector*
(CN710)

❾ *Magnet assy*

❺ *Two screws*
(BVTP M2.6)

❸ *Fiiting base*
(guide) assy

❶ *Two connectors*
(CN709, 715)

12

3-8. TRAY (SUB) (DECK A)

❶ *Rotating the pulley (LD), shift the slider (selection) in the direction of arrow Ⓐ.*
❷ *Rotating the pulley (mode) in the arrow direction, adjust the tray (sub) to be removed.*
❸ *Rotating the pulley (LD), shift the slider (selection) in the direction of arrow Ⓑ.*
❹ *Rotating the pulley (mode) in the arrow direction, remove the tray (sub).*
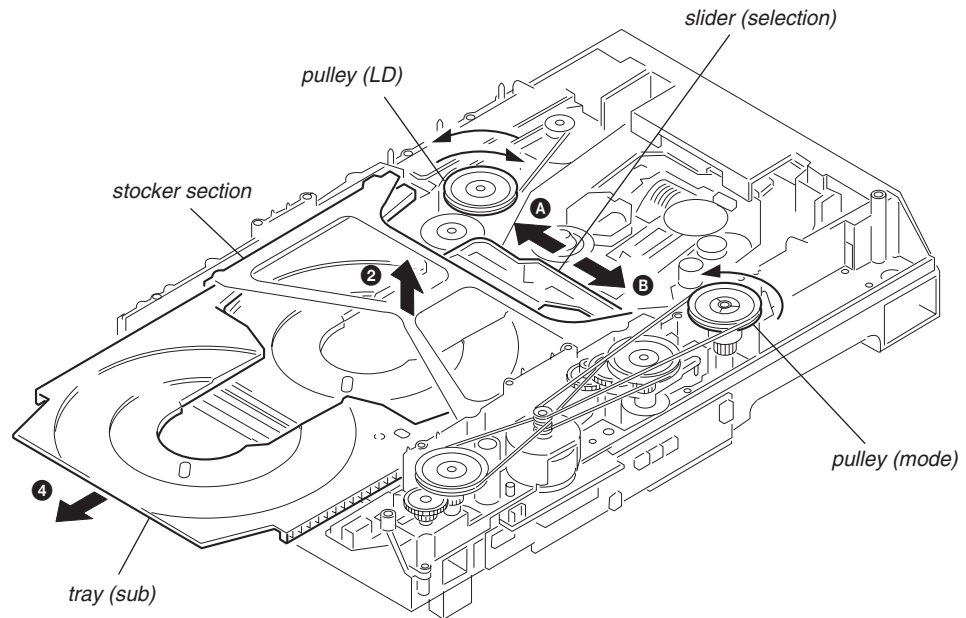
3-9. CHASSIS (MOLD B) SECTION, STOCKER SECTION AND SLIDER (SELECTION)

Note: On mounting parts, refer to pages 14 to 16.

SECTION 4
ASSEMBLY

GEARS INSTALLATION
(Page 14)

SLIDER (SELECTION) INSTALLATION
(Page 15)

STOCKER SECTION INSTALLATION
(Page 15)

CHASSIS (MOLD B) SECTION
INSTALLATION (Page 16)
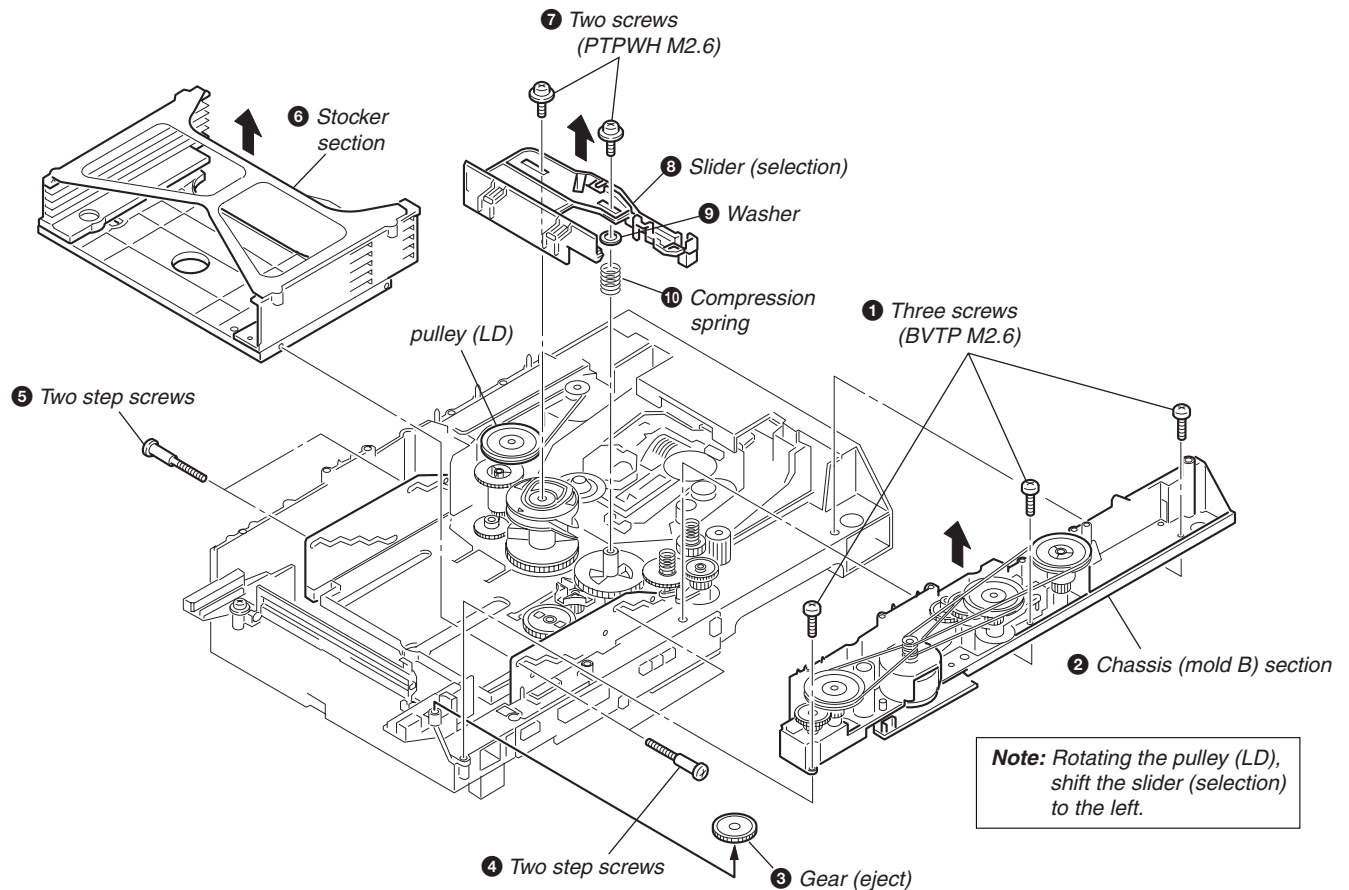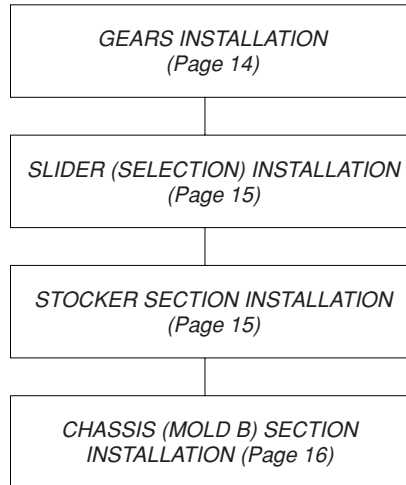
Note : Follow the assembly procedure in the numerical order given.

4-1. GEARS INSTALLATION

❸ *Gear (gear B)*

Portion A

Adjust the gear (gear B) with the portion A as shown.

❶ *Slide the slider (u/d) fully in the arrow direction.*

❷ *Gear (U/D slider)*

Slider (U/D) gear

Adjust the gear so that ot meshes with the bottom tooth of slider (U/D) gear, as shown.

❹ *Gear (gear A)*

Gear (gear B) *Linearly*

Adjust so as to be aligned with gear B linearly, as shown.

4-2. SLIDER (SELECTION) INSTALLATION

❻ Two screws
(PTPWH M2.6

❷ Gear (chucking)

Rotary encoder

×

Align with the slot of
rotary encoder.

○

❺ Washer

❹ Compression spring

❼ Insert the slider (selection)
into the portion A.

Portion A

❶ Rotary encoder

Align marking

❸ Convex portion of
slider (selection)

Gear (chucking)

Insert a convex portion into
a groove of gear (chucking)

4-3. STOCKER SECTION INSTALLATION

❷ Portion A of tray (sub)

Hook the portion A of tray (sub)
to the slider (selection).

❶ Stocker section

Portion A
of tray (sub)

Sticking of
slider (selection)

❹ Two step screws

❸ Two step screws

4-4. CHASSIS (MOLD B) SECTION INSTALLATION

❸ Three screws
(BVTP M2.6)

❷ Insert the gear (eject) under the gear (LD deceleration).

Portion A

❶ Insert the portion A of chassis (mold B) section into the portion B of slider (selection).

Gear (LD deceleration)

Portion B of slider (selection)

SECTION 5
TEST MODE

Setting the Test Mode
Procedure:
1. Press the POWER button to POWER on.
2. Press the ⏮ AMS ⏭ (DECK A), SBM and ⏮ AMS ⏭ (DECK B) buttons in order without releasing the button.
3. Turn the ⏮ AMS ⏭ (DECK B) knob to select the menu.
4. Press the ⏮ AMS ⏭ (DECK B) knob to execute the test mode.

Releasing the Test Mode
Procedure 1:
1. Turn the ⏮ AMS ⏭ (DECK B) knob to select the Ship Mode.
2. Press the ⏮ AMS ⏭ (DECK B) knob to execute the Ship Mode.
3. Press the POWER button to POWER off.

Contents of test mode

No.	Display	Function
1	SYS Version	System version display
2	CDR Version	CDR version display
3	BU Test	Deck A BU test mode
4	SERVICE	Deck A Service mode
5	Ship Mode	CD Shipment mode
6	FL ALL ON	Fluorescent indicator tube test
7	FL ALL OFF	Fluorescent indicator tube test
8	FL ITIMATSU	Fluorescent indicator tube test
9	LED CHECK	LED check
10	KEY CHECK	Keyboard check
11	RM CHECK	Remote commander check
12	CDR History	CDR error history display
13	Play Speed	Deck A x4 speed

System Version Display
Procedure:
1. Enter the test mode, then turn the ⏮ AMS ⏭ (DECK B) knob to display "SYS Version", and press the ⏮ AMS ⏭ (DECK B) knob.
2. The system version is displayed.
3. To exit from this mode, turn the ⏮ AMS ⏭ (DECK B) knob to display "Ship Mode", and press the ⏮ AMS ⏭ (DECK B) knob to execute the Ship Mode.
4. Press the POWER button to POWER off.

CDR Version Display
Procedure:
1. Enter the test mode, then turn the ⏮ AMS ⏭ (DECK B) knob to display "CDR Version", and press the ⏮ AMS ⏭ (DECK B) knob.
2. The CDR version is displayed.
3. To exit from this mode, turn the ⏮ AMS ⏭ (DECK B) knob to display "Ship Mode", and press the ⏮ AMS ⏭ (DECK B) knob to execute the Ship Mode.
4. Press the POWER button to POWER off.

Service Mode (Deck A)
Procedure:
1. Enter the test mode, then turn the ⏮ AMS ⏭ (DECK B) knob to display "SERVICE", and press the ⏮ AMS ⏭ (DECK B) knob.
2. "SERVICE MODE" is displayed.
3. Press the ERASE button, the "SLED OUT" is displayed and the sled moves to the outermost position.
4. Press the FINALIZE button, the "SLED IN" is displayed and the sled moves to the innermost position.
5. Press the ⏮ AMS ⏭ (DECK B) knob, then "SERVICE MODE" is displayed again.
6. To exit from this mode, press the ⏮ AMS ⏭ (DECK A), SBM and ⏮ AMS ⏭ (DECK B) buttons in order without releasing the button.
7. Press the POWER button to POWER off.
Note: Always move the pick-up to the most inside position when exiting from this mode.

Ship Mode
Procedure:
1. Enter the test mode, then turn the ⏮ AMS ⏭ (DECK B) knob to display "Ship Mode", and press the ⏮ AMS ⏭ (DECK B) knob.
2. "Push POWER!" is displayed.
3. Press the POWER button to POWER off.

FL ALL ON Mode
Procedure:
1. Enter the test mode, then turn the ⏮ AMS ⏭ (DECK B) knob to display "FL ALL ON", and press the ⏮ AMS ⏭ (DECK B) knob.
2. All segments of fluorescent indicator tube and all LEDS turn on.
3. Press the MENU/NO button, then "FL ALL ON" is displayed again.
4. To exit from this mode, turn the ⏮ AMS ⏭ (DECK B) knob to display "Ship Mode", and press the ⏮ AMS ⏭ (DECK B) knob to execute the Ship Mode.
5. Press the POWER button to POWER off.

FL ALL OFF Mode
Procedure:
1. Enter the test mode, then turn the ⏮ AMS ⏭ (DECK B) knob to display "FL ALL OFF", and press the ⏮ AMS ⏭ (DECK B) knob.
2. All segments of fluorescent indicator tube and all LEDs turn off.
3. Press the MENU/NO button, then "FL ALL OFF" is displayed again.
4. To exit from this mode, turn the ⏮ AMS ⏭ (DECK B) knob to display "Ship Mode", and press the ⏮ AMS ⏭ (DECK B) knob to execute the Ship Mode.
5. Press the POWER button to POWER off.

FL ITIMATSU Mode
Procedure:
1. Enter the test mode, then turn the ⏮ AMS ⏭ (DECK B) knob to display "FL ITIMATSU", and press the ⏮ AMS ⏭ (DECK B) knob.
2. Checkered patterns of segments are displayed.
3. Press the MENU/NO button, then "FL ITIMATSU" is displayed again.
4. To exit from this mode, turn the ⏮ AMS ⏭ (DECK B) knob to display "Ship Mode", and press the ⏮ AMS ⏭ (DECK B) knob to execute the Ship Mode.
5. Press the POWER button to POWER off.

LED Check Mode
Procedure:
1. Enter the test mode, then turn the ⏮ AMS ⏭ (DECK B) knob to display "LED CHECK", and press the ⏮ AMS ⏭ (DECK B) knob.
2. Turn the ⏮ AMS ⏭ (DECK A) or (DECK B) knob clockwise. The green LED (DISC 1) turns on, then the orange LED (DISC 1) turns on. The each orange LED turns on after the green LED from DISC 1 to DISC 5. The LED (SBM) turns on at last. Counterclockwise rotation gives a performance in reverse order.

3. Press the MENU/NO button, then "LED CHECK" is displayed again.
4. To exit from this mode, turn the |◁◁ AMS ▷▷| (DECK B) knob to display "Ship Mode", and press the |◁◁ AMS ▷▷| (DECK B) knob to execute the Ship Mode.
5. Press the POWER button to POWER off.

KEY Check Mode
Procedure:
1. Enter the test mode, then turn the |◁◁ AMS ▷▷| (DECK B) knob to display "KEY CHECK", and press the |◁◁ AMS ▷▷| (DECK B) knob.
2. "Got |◁◁ keys" is displayed.
3. Press the buttons, and when all the buttons are pressed (without the POWER button), "Got 35 keys" will be displayed.
4. To exit from this mode, press the |◁◁ AMS ▷▷| (DECK A), SBM and |◁◁ AMS ▷▷| (DECK B) buttons in order without releasing the button.
5. Press the POWER button to POWER off.

Remote Commander Check
Procedure:
1. Enter the test mode, then turn the |◁◁ AMS ▷▷| (DECK B) knob to display "RM CHECK", and press the |◁◁ AMS ▷▷| (DECK B) knob.
2. Press the ▷ key on the remote commander, then "Got PlayCom" is displayed.
3. Press the MENU/NO button, then "RM CHECK" is displayed again.
4. To exit from this mode, turn the |◁◁ AMS ▷▷| (DECK B) knob to display "Ship Mode", and press the |◁◁ AMS ▷▷| (DECK B) knob to execute the Ship Mode.
5. Press the POWER button to POWER off.

CDR History Display
Procedure:
1. Enter the test mode, then turn the |◁◁ AMS ▷▷| (DECK B) knob to display "CDR History", and press the |◁◁ AMS ▷▷| (DECK B) knob.
2. "00 ######## ########" is displayed as the first error hitory.
3. Turn the |◁◁ AMS ▷▷| (DECK B) knob to select the error history. The number of error histories is ten in all.
   (Refer to "Contents of CDR error history".)
4. Press the MENU/NO button, then "CDR History" is displayed again.
5. To exit from this mode, turn the |◁◁ AMS ▷▷| (DECK B) knob to display "Ship Mode", and press the |◁◁ AMS ▷▷| (DECK B) knob to execute the Ship Mode.
6. Press the POWER button to POWER off.

Play Speed Selection Mode (Deck A)
Procedure:
1. Enter the test mode, then turn the |◁◁ AMS ▷▷| (DECK B) knob to display "Play Speed", and press the |◁◁ AMS ▷▷| (DECK B) knob.
2. "x4 Play" is displayed. If a CD is in the deck A, pressing the ▶ button executes the 4 times speed playback.
3. Press the ■ button to stop the playback.
4. Press the MENU/NO button, then "Play Speed" is displayed again.
5. To exit from this mode, turn the |◁◁ AMS ▷▷| (DECK B) knob to display "Ship Mode", and press the |◁◁ AMS ▷▷| (DECK B) knob to execute the Ship Mode.
6. Press the POWER button to POWER off.

Contents of CDR error history

display(example)
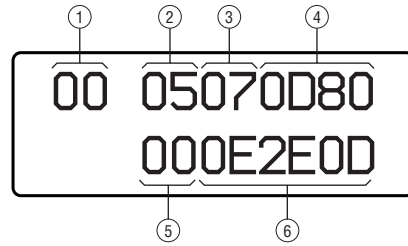
(hexadecimal)

① Order of the error history
   00 to 09: ten error histories in all

② Error contents
   01: unable to focus on
   02: Q code/ATIP discontinuous (several frames preceding)
   03: Q code/ATIP unreadable
   04: search taking more than sixteen seconds
   05: focus failure
   06: sled over run
   07: not passing by start time to write
   08: audio buffer over
   09: sync failure

   example : 05 is focus failure

③ Operation mode
   bit 7: Speed
      0:   normal speed
      1:   x4 speed
   bit 6 to bit 0: Number of inner condition
      01: POWER off condition/during shift to POWER on
      02: POWER off and shipment setting/during shift to POWER off and shipment setting
      03: stop condition/during stop
      04: during start up of servo
      05: during TOC reading and others
      06: during CD TEXT reading
      07: during standby(waiting for command from the CD system)/during search
      08: during playback
      09: during manual search(playback)

      0A: during pause
      0B: during manual search(pause)
      0C: during OPC
      0D: recording standby/during recording pause (enable to shift to recording)
      0E: during recording
      0F: unable to record (waiting for shift to being recordable)
      10: PMA updating
      11: during operation of unfinalize
      12: during operation of finalize
      13: PMA erasing
      14: emergency
      15: recording preparation
      16: recording end

examples :

HEX	bit 7	6 5 4	3 2 1 0	Operation mode
07	0 0	000 0	0111 7	normal speed, during standby(waiting for command from the CD system)/during search
91	1 1	001 1	0001 1	x4 speed, during operation of unfinalize

④ Start time of read in(compression method)

bit 15 to bit 13 : (min)

   0: 97 min

   1: 96 min

   2: 95 min

   7: others

bit 12 to bit 7: (sec)

bit 6 to bit 0: (frame)

examples :

HEX bit	15 14 13	12 11 10 9 8 7	6 5 4 3 2 1 0	Start time of read in
0D , 80	000 97(min)	0 1101 1 27(sec)	000 0000 0(frame)	97 : 27 : 00
11 , 16	000 97(min)	1 0001 0 34(sec)	001 0110 22(frame)	97 : 34 : 22

⑤ Write POWER (integer of mW x 10, available during write processing)

   examples: 00 means unavailable

           (when ③ operation mode is not recording)

           : A3 means 163(decimal), i.e. 16.3 mW

⑥ ATIME (min)/(sec)/(frame)

   example: 0E, 2E, 0D means 14 : 46 : 13

Abbreviations:

   ATIP : Absolute Time In Pre-groove

   OPC : Optimum POWER Control

   PMA : Program Memory Area

SECTION 6
ELECTRICAL ADJUSTMENTS

CD SECTION (DECK A)

Note :
1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

S Curve Check
Connection :
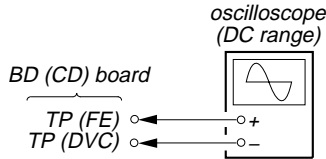
Procedure :
1. Connect an oscilloscope to test point TP (FE) and TP (DVC) on the BD board.
2. Turn the power on.
3. Load the disc (YEDS-18).
4. Enter the test mode, select the BU Test asd press the |◁◁ AMS ▷▷| (DECK B) knob to display "bdt S CURVE".
5. Press the |◁◁ AMS ▷▷| (DECK B) knob. "LD AL" is displayed and playback starts automatically.
6. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3.6 ± 0.5 Vp-p.
7. Press the MENU/NO button to stop playback.
8. Exit from the test mode.
(Refer to the TEST MODE Section)
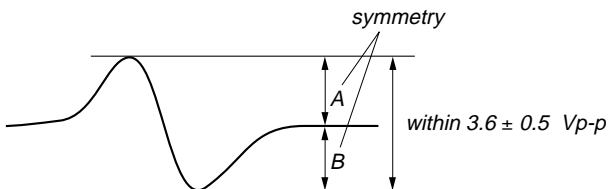
VOLT/DIV : 1V
TIME/DIV : 2ms

Note: Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.

RF Level Check
Connection :
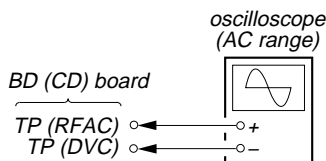
Procedure :
1. Connect an oscilloscope to TP (RFAC) and TP (DVC).
2. Turn the power on.
3. Load the disc (YEDS-18) and playback the number five track.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note: A clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.

VOLT/DIV : 200mV
TIME/DIV : 500ns

level : 1.1 ± 0.3Vp-p
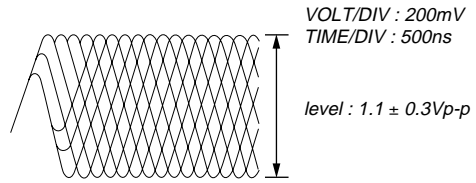
E-F Balance (1 Track jump) Check
Connection :
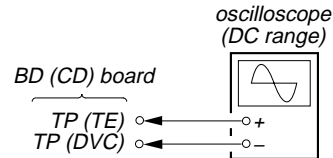
Procedure:
1. Connect an oscilloscope to TP (TE) and TP (DVC).
2. Turn the power on.
3. Load the disc (YEDS-18) and playback the number five track.
4. Press the ▮▮ (DECK A) button.
(Becomes the 1 track jump mode.)
5. Confirm the level B and A (DC voltage) on the oscilloscope waveform.

level=1.1 ±0.6Vp-p
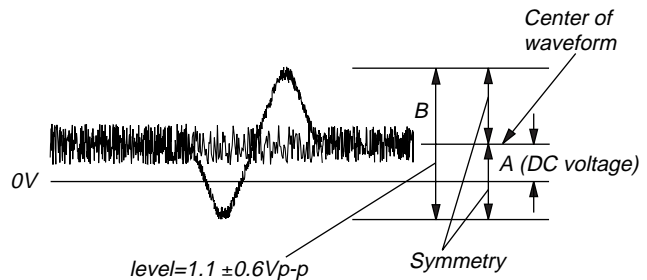
Specification level: $\dfrac{A}{B}$ x 100=less than ±22%

[BD BOARD] SIDE A
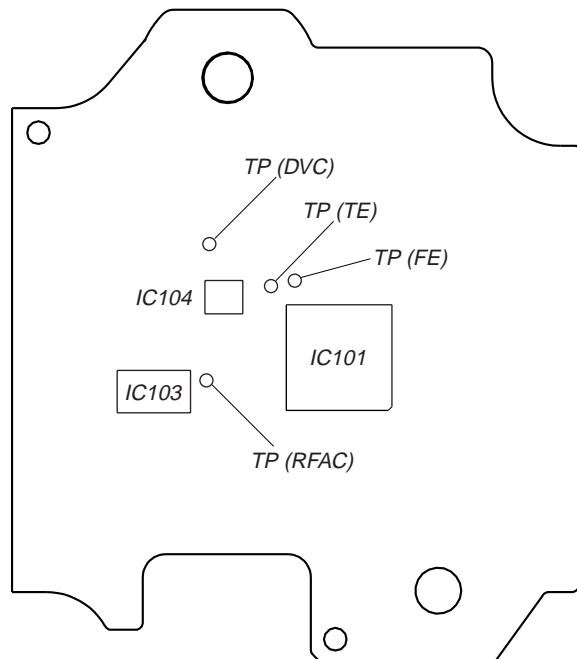
CD-R/RW SECTION

* The following the method of locating the faulty point and electrical adjustment.

1. Connection and Setting of Programs

1-1. Connection

③ PC
(w/ Serial I/F)

COM1

⑧
RS-232C Cable

⑤ Oscilloscope

To
RCD-W222ES

(B)   (C)   (D)

② Jig

MPXOUT

0 758 358 11
CDM65-RBD1   SERVICE

RESET CONTROL FIRM

⑨ Cables for Jig connecting

(A)

(B) (C)   (D)

⑥ LaserPower
Meter

① CDM65-RBD1

⑦
Test Disc

jig
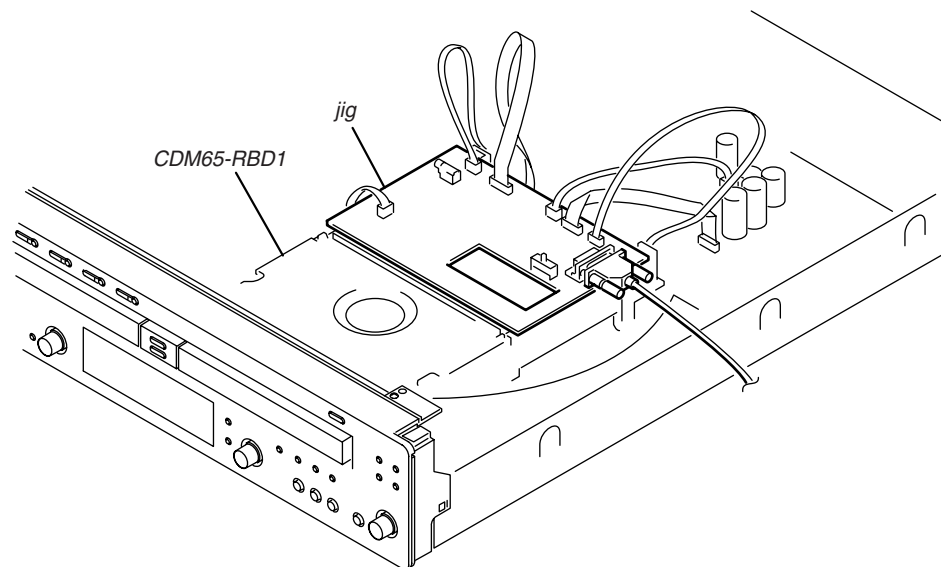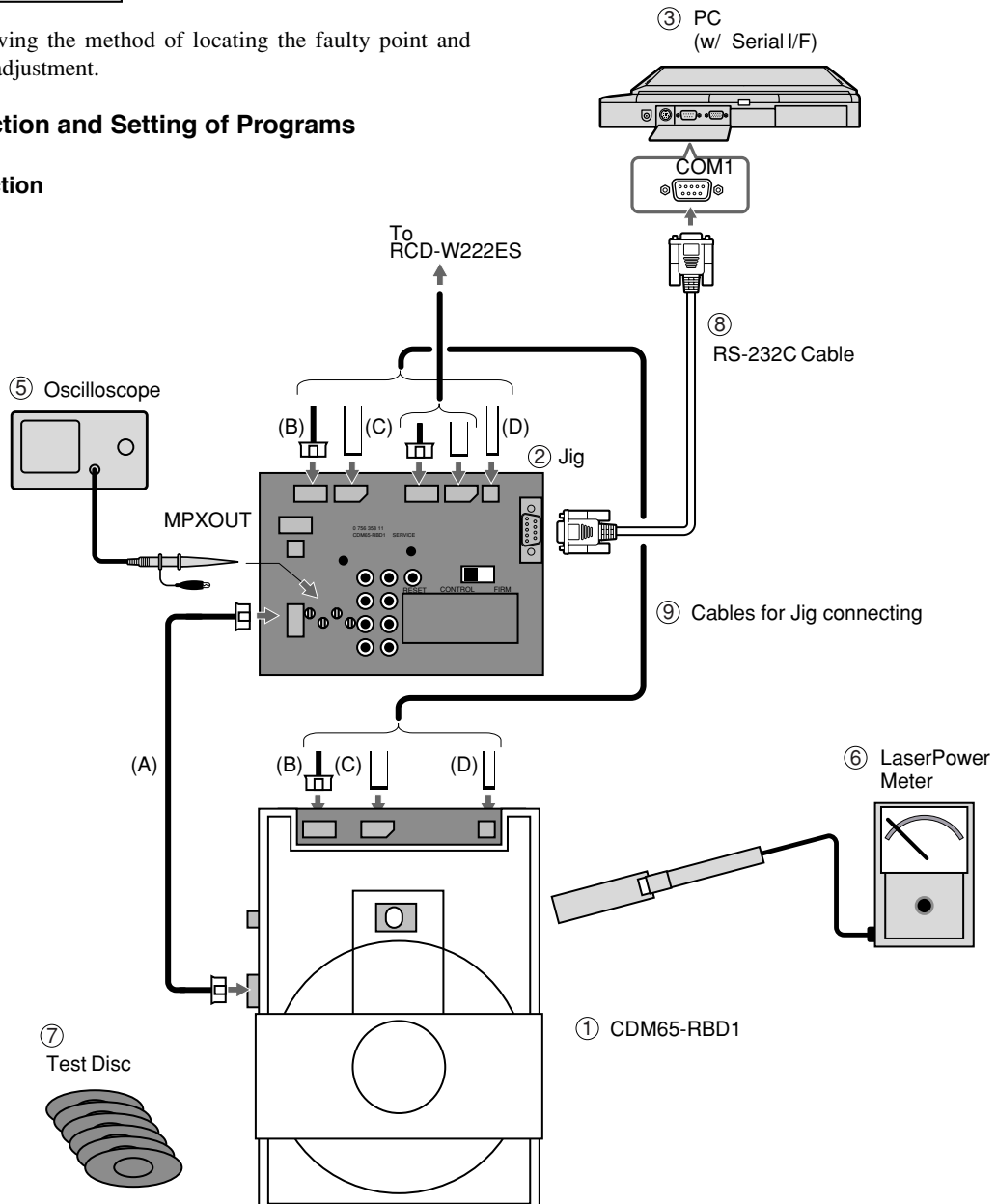
CDM65-RBD1

▲ Fig. Position of Jig (Set the jig after removing the cover of CDM65-RBD1)

1-2. Equipments to prepare

① Test Object   Both RBD1 and CDM65-RBD1 shall be tested.
                              RBD1 :   Flash Memory Writing of of
                                              Circuit Test by Self-diagnostics
                              CDM65-RBD1 : Electrical Adjustment
                                              Performance Test

② Jig   (With ⑨ Cables, Parts No.J-2501-223-A)
③ PC   Windows95/98/2000/Me with COMport (RS-232C)
④ Programs   TeraTerm Pro + Service macro
⑤ Oscilloscope   More than 150MHz
⑥ Laser Power Meter   LEADER LPM-8001 (Parts No.J-2501-046-A)
⑦ Test Disc

PATD-012 : (Parts No.4-225-203-1)	Adjustment for Playback	(CD,CD-R)
TCD-W091W : (Parts No.J-2501-226-A)	Adjustment for Playback	(CD-RW)
CRM74 (Blank CD-R) :	Adjustment and Check for Recording	(CD-R)
CWM74 (Blank CD-RW) :	Check for Recording	(CD-RW)
TCD-W032W : (Parts No.J-2501-227-A)	Defocus tolerance	(CD-RW)

⑧ RS-232C Cable

L=2000mm

(E)

D-sub 9pin Female cross cable

5 4 3 2 1		5 4 3 2 1
9 8 7 6		9 8 7 6

1		1
2		2
3		3
4		4
5		5
6		6
7		7
8		8
9		9

——— : mandatory
– – – : not use

⑨ Cables for Jig connecting

L=300mm

(A)   PH 5p

(B)   PH 4p

(C)   FFC 11p 1.0mm pitch (J-2501-200-A)

(D)   FFC 5p 1.0mm pitch (J-2501-212-A)
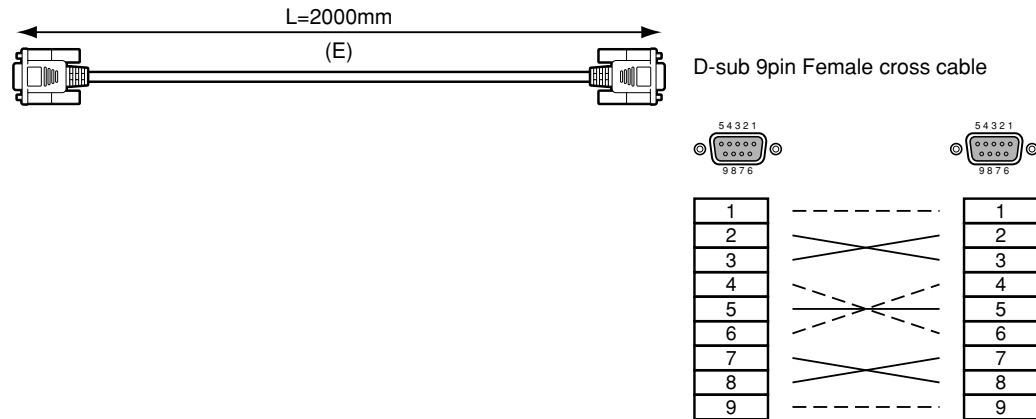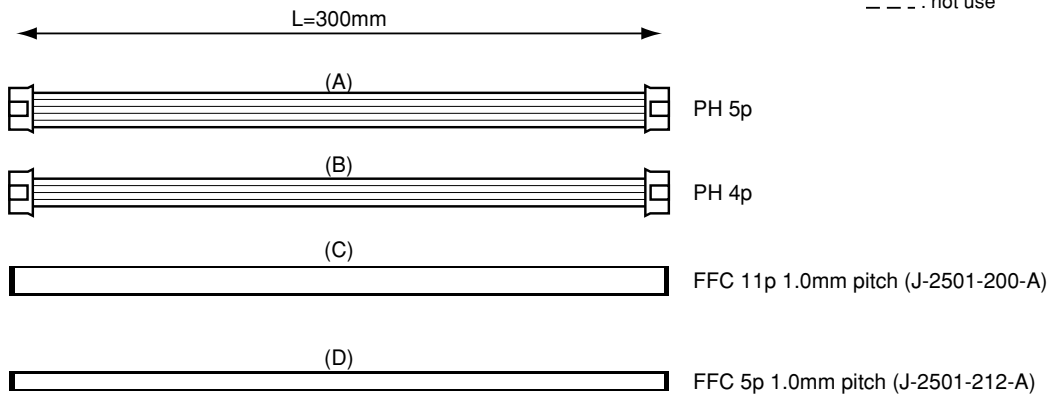
1-3. Setting of Programs (Tera Term Pro and Service macro)

*   Confirmation of System (Windows 98 is used in this explanation) Preparation for Terminal software

1)   Set up the serial port from OS.
a)   Select Start → Settings → Control Panel and select System →
     Device manager → Communication Port (COMn)
     (See Fig. 1-1)

*   Specify the COM port that connected with JIG of CDM65.
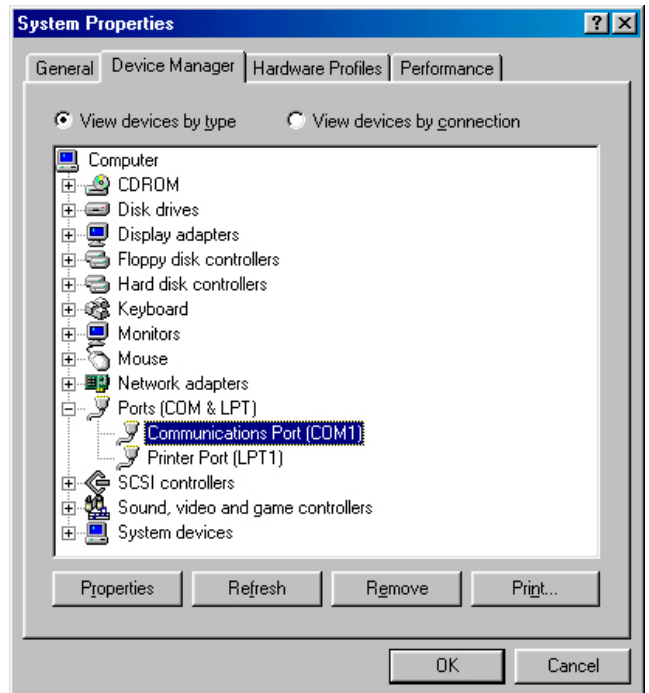
▲ Fig. 1-1

b)   Double click COMn (as you connect to the Jig-CDM65)
     Set the parameters as below.

     Bits per second : 38400
     Data bits   : 8
     Parity   : non
     Stop bits   : 1
     Flow control   : hardware
     (See Fig.1-2)
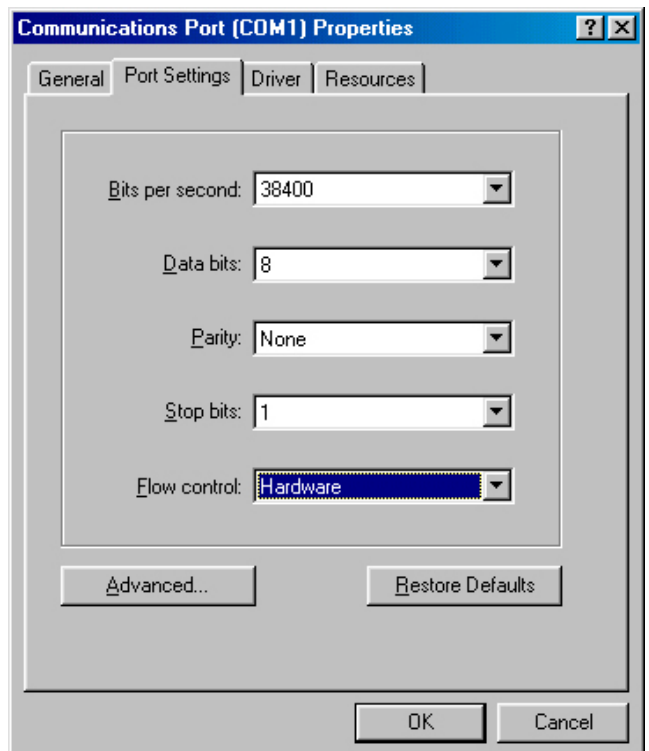
▲ Fig. 1-2

c)   Press "Advanced..." button
      Remove the check "Use FIFO buffers ..."
      (See Fig.1-3)
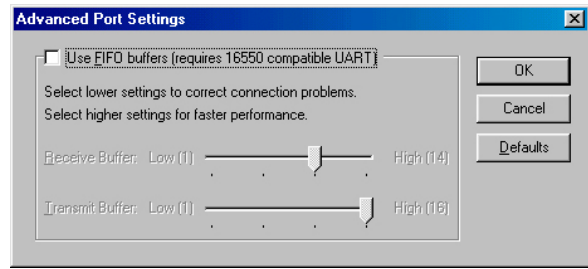
▲ Fig. 1-3

2)   Unzip the file "ttermp.zip" by PC.
      (The file "ttermp.zip" is distributed together with the service manual.)
3)   After unzip the files, you can find setup.exe.
      Double click the setup.exe.
      Please install as the installer is.
      Do not change the directory that files are installed. (use default)
4)   Unzip the file "files-0208.zip" by PC.
      Copy all "ttl" file and "FUNC" folder which are contained in "files-0208" and paste them in the "Ttermpro" file as below.
      (The file "files-0208.zip" is distributed together with the service manual.)

Ttermpro
├── **01ldp_S.ttl**
│   ⋮
├── **10vwdcC_S.ttl**
│
└── **FUNC**
        ├── **AMS.ttl**
        │   ⋮
        └── **VERCHK.ttl**
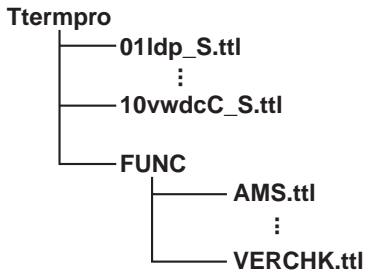
▲ Fig. 1-4

Note : Do not change the directory path.

5)   Start-up the TeraTermPro
      Double click the ttermpro.exe.

6)   Set up the TeraTermPro (IMPORTANT!!)
a)   Select Setup → Serial Port... and set the parameters as below.

      Port   : (As you connect to the Jig-CDM65)
      Baud rate   : 38400
      Data   : 8 bit
      Parity   : none
      Stop   : 1 bit
      Flow control   : hardware
      Transmit delay : 0 msec/char 10 msec/line

      After settings, press "OK" button. (See Fig.1-5)

b)   Terminal setup
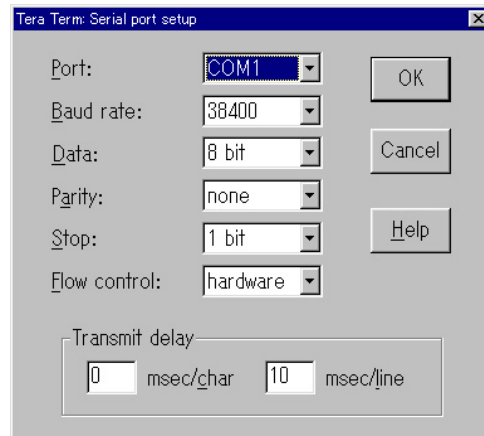
▲ Fig. 1-5

b) Terminal setup
Set the parameters as below.

New-line receive : CR
       transmit : CR

After settings, press "OK" button. (See Fig.1-6)
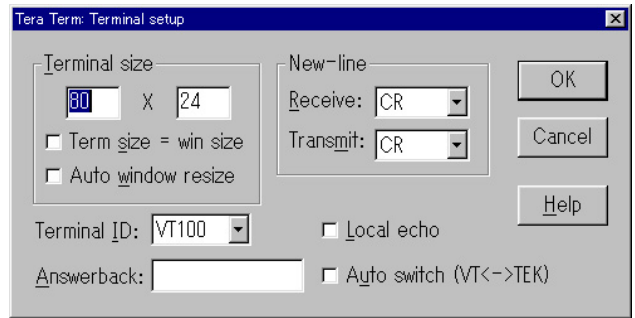
▲ Fig. 1-6

c) General setup
Select the language and press "OK" button. (See Fig.1-7)

▲ Fig. 1-7

d) Saving the setup
Select Setup → Save setup... and save as teraterm.ini in the Ttermpro directory. (See Fig.1-8)
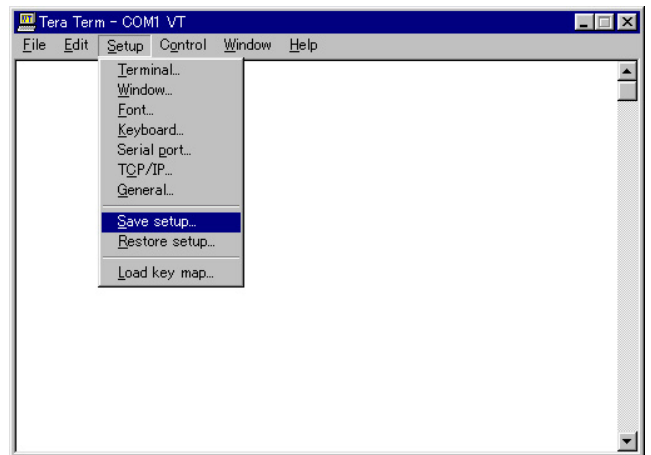
▲ Fig. 1-8

7) Connect the JIG and CDM65.
8) Confirm the S510 on JIG is 'CONTROL'.

9) Power on the CDM65 and press SW101(RESET) on JIG.

"CDM65-RBD1 has connected with this PC (^^)" is displayed. (See Fig.1-9)

If above message is not displayed, you may have some mistakes. Please confirm previous setting procedures again.
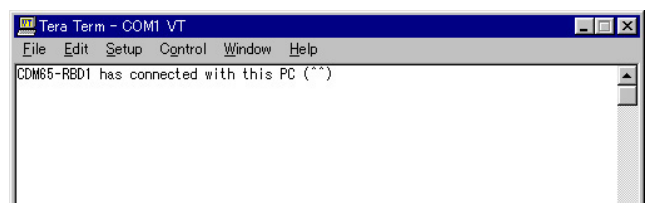
▲ Fig. 1-9

2. Repair Works That Require Electrical Adjustment

In the case of repair works as shown below, electrical adjustment is required.

List (1) : IC101, IC103, IC171, IC201, IC502

List (2) : IC501
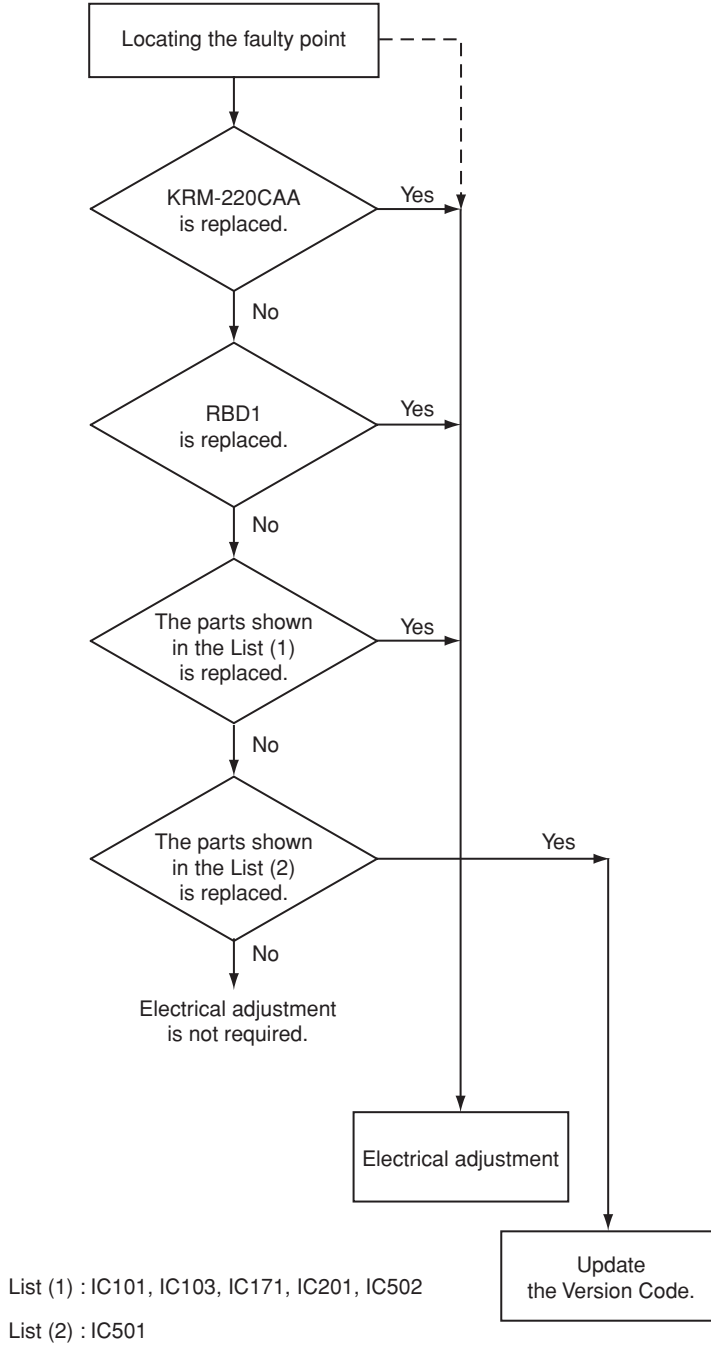
3. Locating the Faulty Point

3-1. Laser Power Check

1) Select the menu as follows. Control → Macro, and select LDPtestL_S.ttl.
Press "Open". (See Fig. 3-1, 3-2)
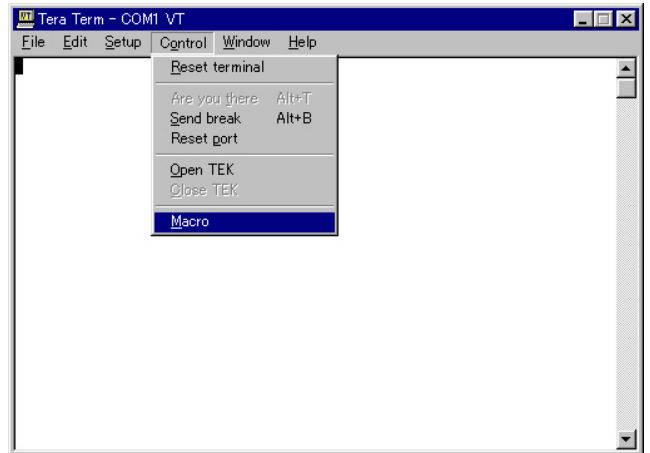
▲ Fig. 3-1
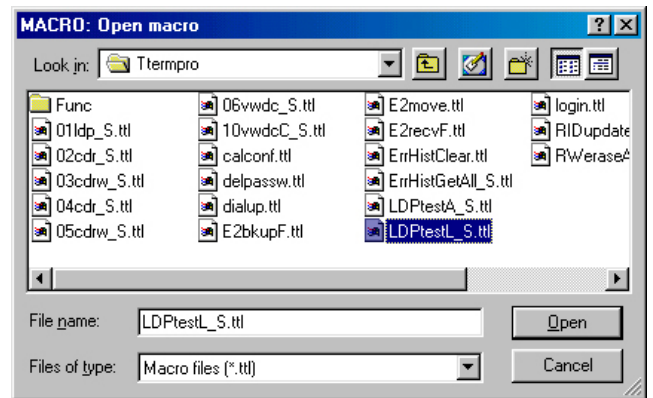
▲ Fig. 3-2

2) Press the "RESET" button (SW101) of the jig as prompted by the display.

3) Place probe of a laser power meter in the specified position following the display as shown in Fig. 3-3. (See Fig. 3-3-a)

▲ Fig. 3-3
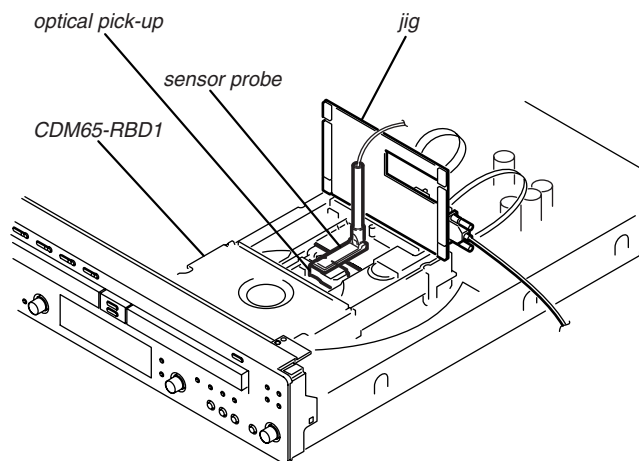
▲ Fig. 3-3-a

4) When the display shown in Fig. 3-4 appears, set the Range of a laser power meter to "1 mW" and press "OK".

▲ Fig. 3-4

5) Check that the laser power meter reading satisfies the following requirement. When the laser power satisfies the required specification, press "OK". (See Fig. 3-5)

   LEADER LPM-8001 : 0.76 to 0.86 mW
   ADVANTEST QQQ : 0.80 to 0.90 mW
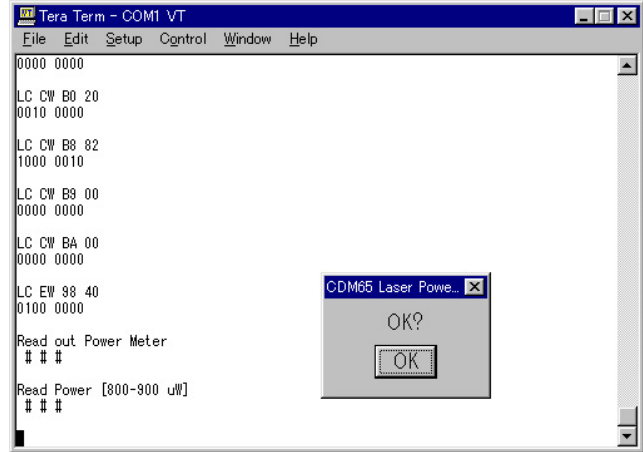
▲ Fig. 3-5

6) When the display shown in Fig. 3-6 appears, set the Range of a laser power meter to "10 mW" and press "OK".

▲ Fig. 3-6

7) Check that the laser power meter reading satisfies the following requirement. When the laser power satisfies the required specification, press "OK". (See Fig. 3-7)

   LEADER LPM-8001 : 4.5 to 4.7 mW
   ADVANTEST QQQ : 4.9 to 5.1 mW
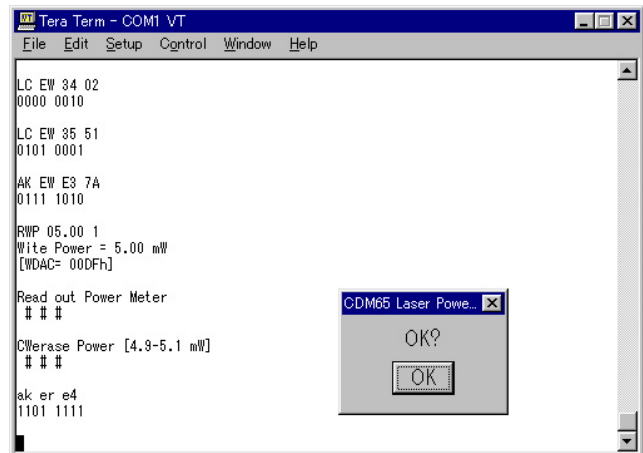
▲ Fig. 3-7

8) Check that the laser power meter reading satisfies the following requirement. When the laser power satisfies the required specification, press "OK". (See Fig. 3-8)

   LEADER LPM-8001 : 9.2 to 9.6 mW
   ADVANTEST QQQ : 9.7 to 10.3 mW
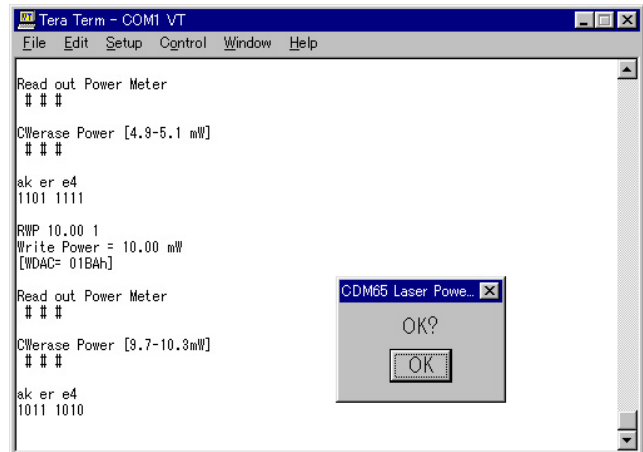
▲ Fig. 3-8

9) Check that the message "Power Check End" appears on display. (See Fig. 3-9)

   If the measurement result is outside the specification value, either perform Section 4.
   CDM65-RBD1 Electrical Adjustment, or locate the cause of the error by performing the Laser Deterioration Judgment.
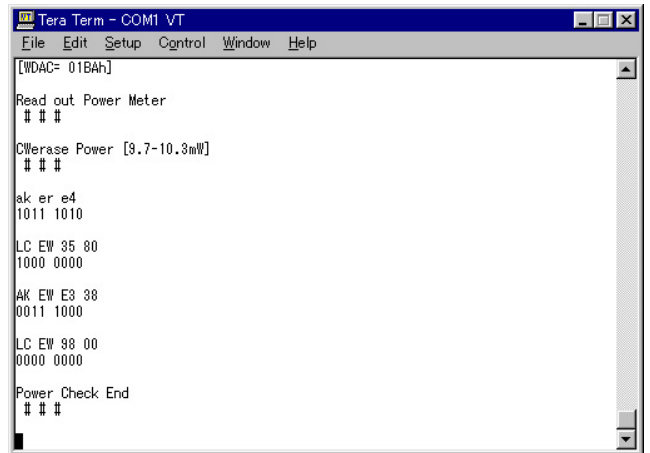
▲ Fig. 3-9

3-2. Laser Deterioration Judgment

1) Select the menu as follows. Control → Macro, and select 10vwdcC_S.ttl.
   Press "Open". (See Fig. 3-10, 3-11)
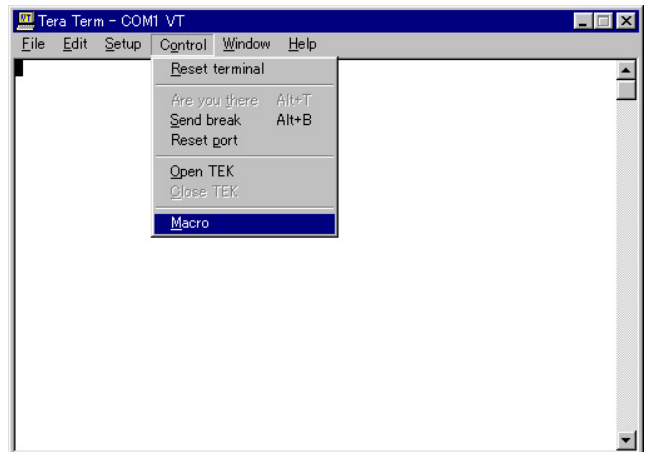
▲ Fig. 3-10
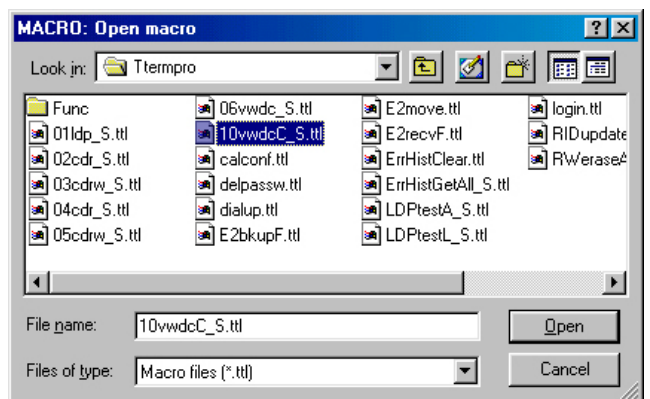
▲ Fig. 3-11

2) Press the "RESET" button (SW101) of the jig as prompted by the display.

3) When the message [OK] appears as shown in Fig. 3-12, press the "OK" button.
   When the laser unit KRM-220CAA (Op) is normal without deterioration of laser, the message [OK] appears. If the laser unit is deteriorated, the message [NG] appears. Then, replace the laser unit KRM-220CAA (Op).
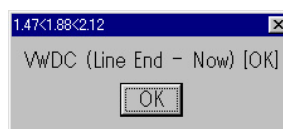
▲ Fig. 3-12

4) Check that the message "CDRW VWDC-CHECK completed!" appears. (See Fig. 3-13)

NG Judgment Result Indication

When the present VWDC value of the laser unit KRM-220CAA (Op) does not satisfy the required specification, the message "VWDC (Line End - Now) [NG]" appears.

Measure: Check the peripheral of CN101.
Replace KRM-220CAA.


```
Tera Term - COM1 VT
File  Edit  Setup  Control  Window  Help

AN5 Measure START
No.  1,  387,   386,   386,
AN5 Measure END!


e2pr 0D

E2PROM Word Read
Add,Data
0Dh,0171h

LC EW 35 80
1000 0000

AK EW E3 38
0011 1000

LC EW 98 00
0000 0000

CDRW VWDC-CHECK completed  I
 # # #
```

▲ Fig. 3-13

3-3. Use of Self Diagnosis Function-1 (In the case when result data of the past electrical adjustment, is not needed.)

Perform the self diagnosis as described below in the case when electrical adjustment is not performed yet, or when result data of the electrical adjustment in the past, is not needed and ready to be erased.)

1) Connect the CDM65-RBD1 (abbreviated as CDM65 hereafter) that is going to be repaired, the jig and a PC following the Connection Diagram as shown in section 1-1.
2) Turn on the power of the RCD-W222ES in which the CDM65 is installed.
3) Start up the TeraTermPro that is installed in PC. Set the switch S510 on the jig to "CONTROL".

4) Press the "RESET" button (SW101) of the jig. (See Fig. 3-14)


```
Tera Term - COM1 VT
File  Edit  Setup  Control  Window  Help

CDM65-RBD1 has connected with this PC (^^)
```

▲ Fig. 3-14

5) Type portchk [Enter] from keyboard of PC. (See Fig. 3-15)

Note 5-1 : When the KRM-220CAA is connected, the spindle motor rotates at a high speed. If the message "H8/3064 Port Check END!" appears, press the "RESET" button and stop the spindle.

Note 5-2 : When the CDM65 (loading mechanism) is installed, ignore the message "PA (#93-100): NG".

Confirm that "OK" is displayed in all items except for the cases as described above.

If "NG" is displayed in any item, it is assumed that the pin number of IC501 as shown in Fig. 3-15 is defective or its peripheral has abnormality. Perform the repair work again and repeat the self diagnosis. Repeat the repair work and self diagnosis until OK is displayed.


```
Tera Term - COM1 VT
File  Edit  Setup  Control  Window  Help

CDM65-RBD1 has connected with this PC (^^)

portchk
H8/3064 Port Check START
 PB( #2- #9): OK
 P4(#18-#26): OK
 P1(#36-#43): OK
 P2(#45-#52): OK
 P5(#53-#56): OK
 P6(#58-#61,#69-#72): OK
 PA(#93-#100):NG
H8/3064 Port Check END!
```

▲ Fig. 3-15

6) Type diagno [Enter] from keyboard of PC.

   Note 6-1 : When the KRM-220CAA is connected, the spindle motor rotates at a high speed. If the message "Diagnosis END!" appears, press the "RESET" button and stop the spindle.

   Note 6-2 : When the KRM-220CAA is connected (i.e. when the FFC for optical laser unit is connected to CN101 is connected), ignore the message "AK8567 (w/o OP) check: NG".

   Confirm that "OK" is displayed in all items except for the cases as described above.

   If "NG" is displayed in any item, it is assumed that the point indicated by the item in Fig. 3-16 is defective or its peripheral has abnormality. Perform the repair work again and repeat the self diagnosis. Repeat the repair work and self diagnosis until "OK" is displayed.
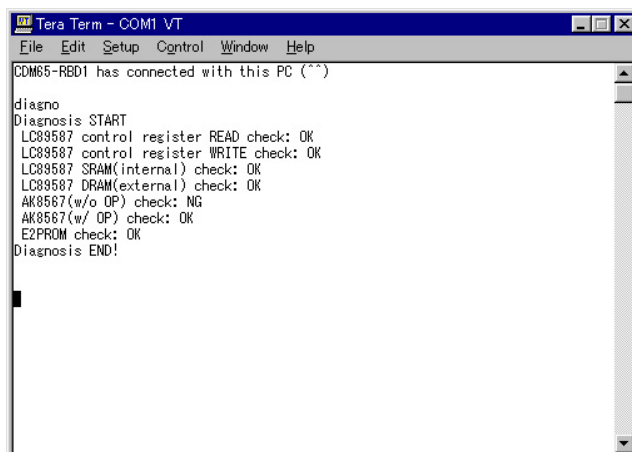
▲ Fig. 3-16

7) Perform the operation check.

3-4. Use of Self Diagnosis Function-2
(In the case when result data of the past electrical adjustment, should be left saved.)

Perform the self diagnosis as described below in the case when the faulty point could not be identified even after completion of the repair work that is defined as "The repair work in which electrical adjustment is not required" in section "2. Repair Works That Require Electrical Adjustment".

1) Select the menu as follows. Control → Macro, and select E2bkupF.ttl.
   Press "Open". (See Fig. 3-17, 3-18)
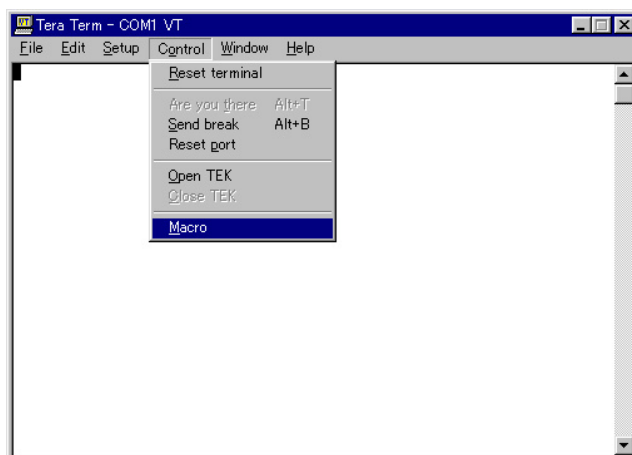
▲ Fig. 3-17
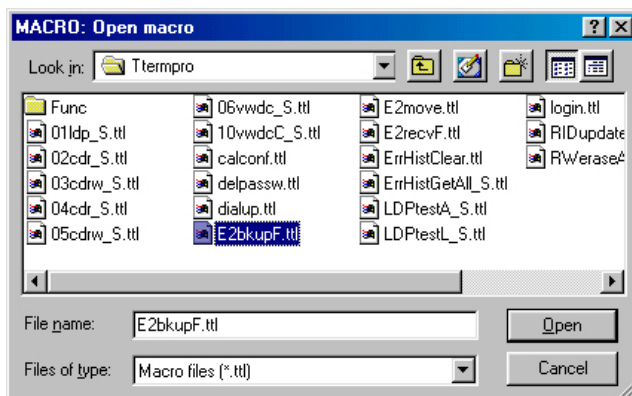
▲ Fig. 3-18

2) Type the filename in which result of electrical adjustment is going to be saved. Press "OK". (See Fig. 3-19)
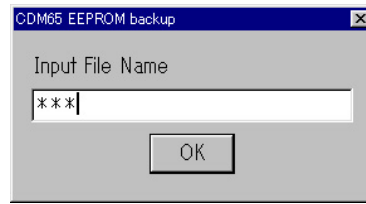
▲ Fig. 3-19

3) Confirm that the message "completed!" appears.
The EEPROM data is backed up. (See Fig. 3-20)
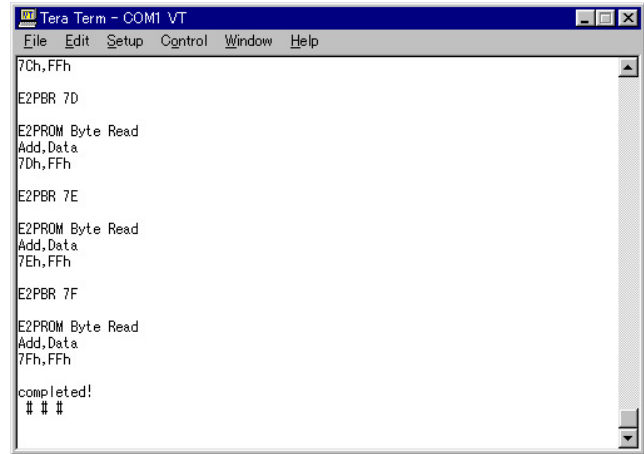
▲ Fig. 3-20

4) Perform step 1) through step 6) of section "3-3. Use of Self Diagnosis Function-1".
5) Select the menu as follows. Control → Macro, and select E2recvF.ttl.
Press "Open".

6) Press the "RESET" button (SW101) of the jig as prompted by the display. (See Fig. 3-21)
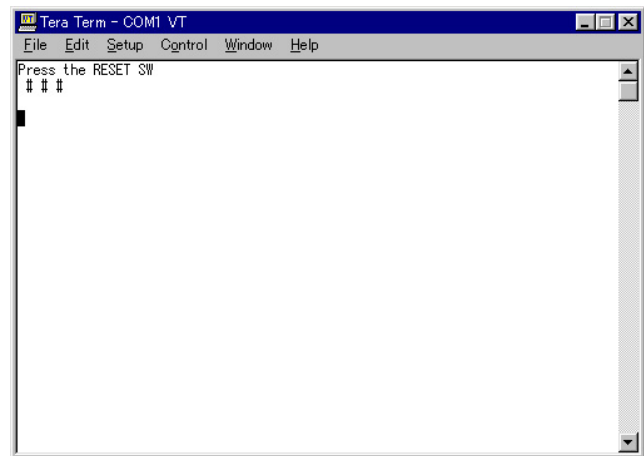
▲ Fig. 3-21

7) Type the filename in which result of electrical adjustment is saved. Press "OK". (See Fig. 3-22)

▲ Fig. 3-22

8) Confirm that the message "completed!" appears.
The EEPROM data is recovered. (See Fig. 3-23)
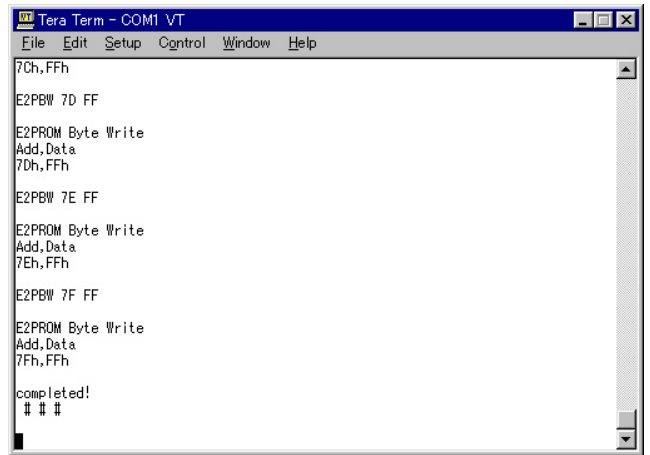
▲ Fig. 3-23

9) Perform the operation check.

3-5. Acquisition of Error History and Acquisition of Elapsed Operating Hours

Check if error has occurred or not by performing the following steps. If error has occurred, it is interpreted and saved in the specific directory. Check contents of the error by viewing the specific directory as described below.

1) Select the menu as follows. Control → Macro, and select ErrHistGetAll_S.ttl.
Press "Open". (See Fig. 3-24, 3-25)
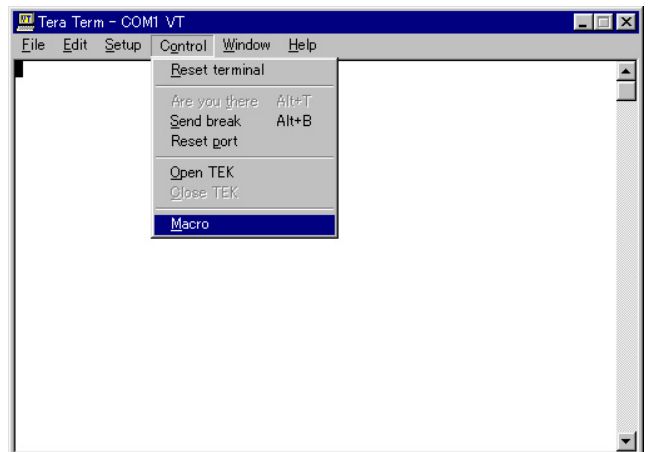
▲ Fig. 3-24
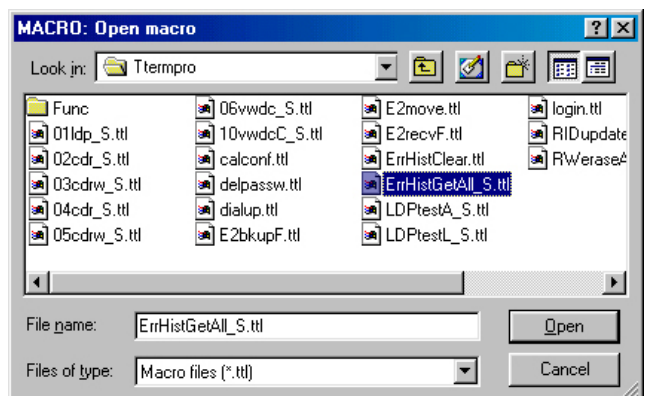
▲ Fig. 3-25

2) Press the "RESET" button (SW101) of the jig as prompted by the display.

3) When there is no error, the display as shown in Fig. 3-26 appears.

```
Tera Term - COM1 VT
File  Edit  Setup  Control  Window  Help
21h,ADh

E2PBR 20

E2PROM Byte Read
Add,Data
20h,01h

E2PBR 2D

E2PROM Byte Read
Add,Data
2Dh,30h

E2PBR 30

E2PROM Byte Read
Add,Data
30h,FFh

No Error
# # #
```
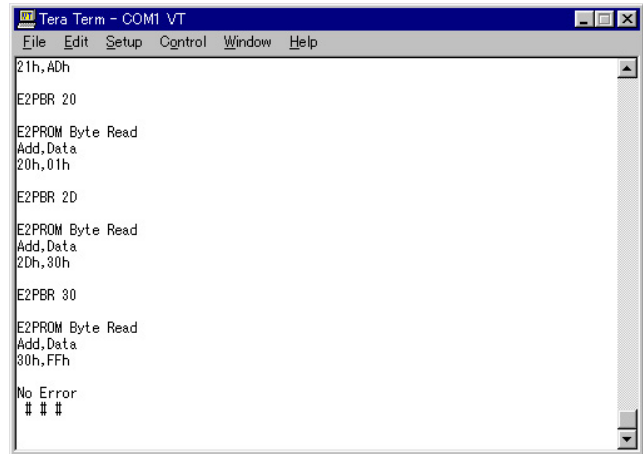
▲ Fig. 3-26

4) When error has occurred, the display as shown in Fig. 3-27 appears showing error history. Contents of the errors are displayed as shown in Fig. 3-28 after interpretation of the error log. Check the contents of the error by looking at the file "EEPROM_Errorlog.txt" in the TeraTermPro directory

```
Tera Term - COM1 VT
File  Edit  Setup  Control  Window  Help
34h,92h

E2PBR 35

E2PROM Byte Read
Add,Data
35h,81h

E2PBR 36

E2PROM Byte Read
Add,Data
36h,14h

E2PBR 37

E2PROM Byte Read
Add,Data
37h,3Dh

completed!
# # #
```
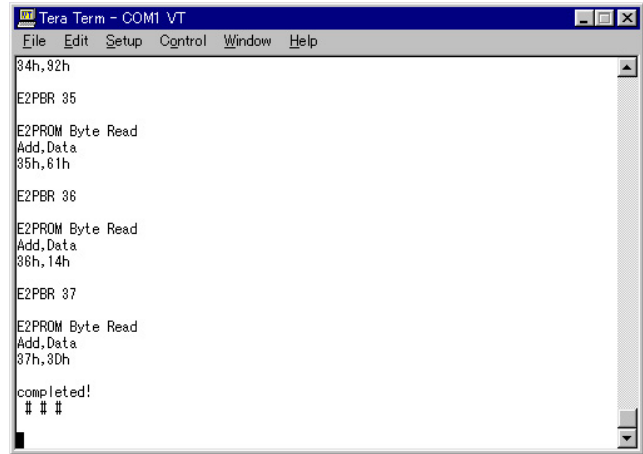
▲ Fig. 3-27

5) The elapsed operating hours is shown at the top of "EEPROM_Errorlog.txt" regardless of presence/absence of the error history. Check the elapsed operating hours from the display as shown in Fig. 3-28.

```
SN = xxxx
 Op elapsed time:        12:0:56
 Spindle elapsed time: 17:9:44

**** Error Log data(0) ****
Error Pointer= 38
Error Code= 05,04,E0,00,00,01,0D,0D
Focus is dropped
1x speed
Servo wakeup
Lead In Start Time= 7:0:0
Laser Power= 0
ATIME= 1:13:13

**** Error Log data(-1) ****
Error Pointer= 30
Error Code= 05,04,E0,00,00,00,14,43
Focus is dropped
1x speed
Servo wakeup
Lead In Start Time= 7:0:0
Laser Power= 0
ATIME= 0:20:67
```
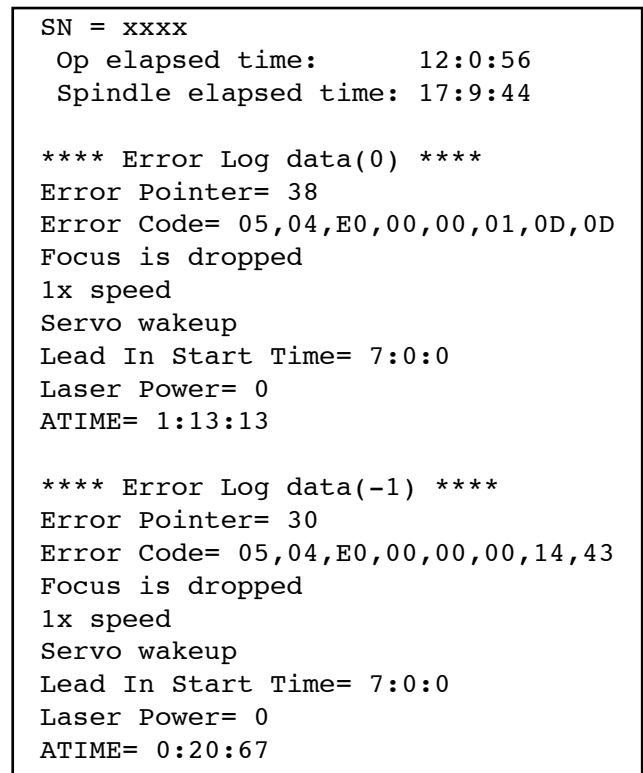
▲ Fig. 3-28 : Error log example

4. CDM65-RBD1 Electrical Adjustment

4-1. Laser Power Adjustment

1) Start up the TeraTermPro and set the switch S510 on the jig to "CONTROL".

2) Select the menu as follows. Control → Macro, and select 01ldp_S.ttl.
Press "Open". (See Fig. 4-1)
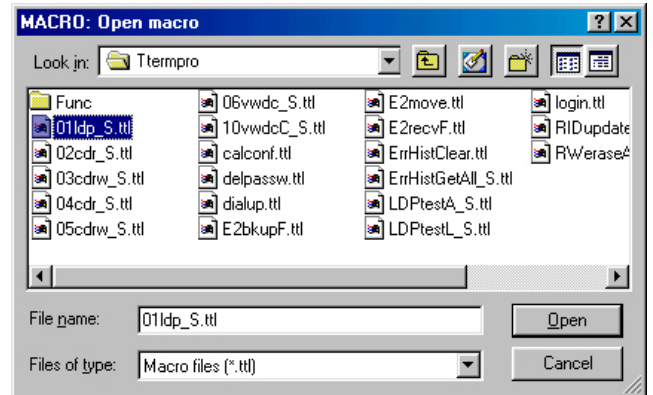
▲ Fig. 4-1

3) Press the "RESET" button (SW101) of the jig as prompted by the display.
4) Press the "RESET" button (SW101) of the jig again as prompted by the display.

5) When the display as shown in Fig. 4-2 appears, type the serial number (See Fig. 4-3) that is printed on the label attached to the RBD1. (This dialog appears only when the EEPROM IC502 is replaced.)
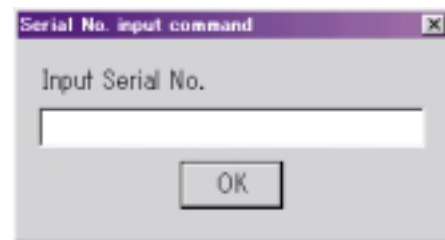
▲ Fig. 4-2

▲ Fig. 4-3

When the display as shown in Fig. 4-4 appears, press "No".
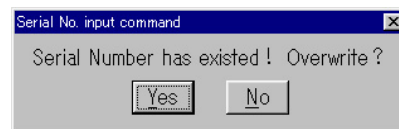
▲ Fig. 4-4

When the display as shown in Fig. 4-5 appears after that, press "Yes".
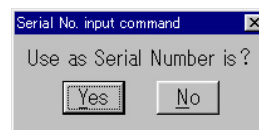
▲ Fig. 4-5

6) When the display as shown in Fig. 4-6 appears, place the probe of the laser power meter on top of the optical laser unit, and press "OK". (See Fig. 3-3-a, page 27)


▲ Fig. 4-6

7) When the display as shown in Fig. 4-7 appears, set the Range of a laser power meter to "1 mW" and press "OK".
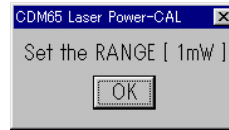
▲ Fig. 4-7

8) Adjust the laser output power as follows.
The laser output power (i.e., laser power meter reading) should satisfy the specification shown below.

LEADER LPM-8001 : 0.81 +/- 0.05 mW (0.76 to 0.86 mW)
ADVANTEST @@@ : 0.85 +/- 0.05 mW (0.80 to 0.90 mW)

* To increase the laser output power
Press [Yes] of the "Up?" dialog box.
* To decrease the laser output power
Press [No] of the "Up?" dialog box and then press [Yes] of the "Down?" dialog box.

Repeat until the laser output power satisfies the specification. (See Fig. 4-8, 4-9)
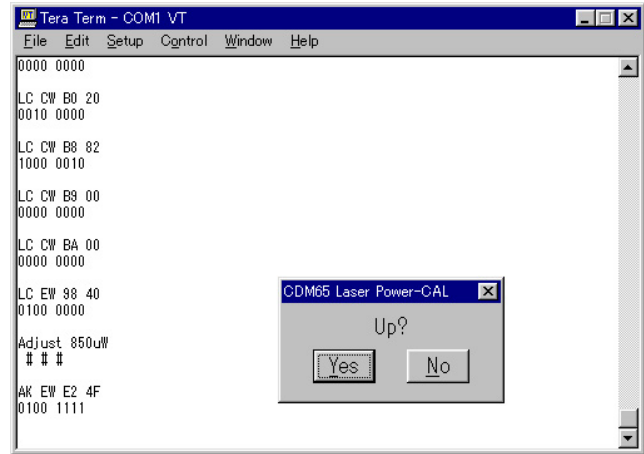
▲ Fig. 4-8
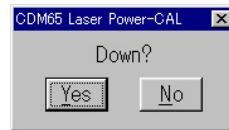
▲ Fig. 4-9

* When the setting value is determined
Press [No] of the "Up?" dialog box
and then press [No] of the "Down?" dialog box
and press [Yes] of the "Save?" dialog box. (See Fig. 4-10)
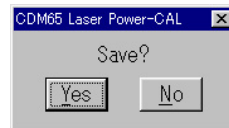
▲ Fig. 4-10

9) When the display shown in Fig. 4-11 appears, set the Range of a laser power meter to "10 mW" and press "OK".

▲ Fig. 4-11

10) Adjust the laser output power as follows.
The laser output power (i.e., laser power meter reading) should satisfy the specification shown below.

LEADER LPM-8001 : 4.6 +/- 0.1 mW (4.5 to 4.7 mW)
ADVANTEST @@@ : 5.0 +/- 0.1 mW (4.9 to 5.1 mW)

* To increase the laser output power
Press [Yes] of the "Up?" dialog box.
* To decrease the laser output power
Press [No] of the "Up?" dialog box
and then press [Yes] of the "Down?" dialog box.

Repeat until the laser output power satisfies the specification.
(See Fig. 4-12, 4-13)
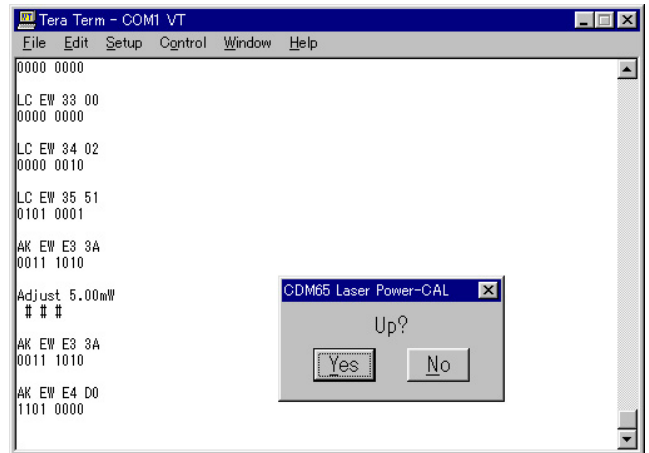
▲ Fig. 4-12
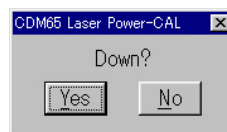
▲ Fig. 4-13
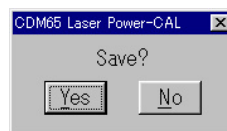
* When the setting value is determined
Press [No] of the "Up?" dialog box
and then press [No] of the "Down?" dialog box
and press [Yes] of the "Save?" dialog box. (See Fig. 4-14)

▲ Fig. 4-14

11) Adjust the laser output power as follows.
The laser output power (i.e., laser power meter reading) should satisfy the specification shown below.

LEADER LPM-8001 : 9.4 +/- 0.2 mW (9.2 to 9.6 mW)
ADVANTEST @@@ : 10.0 +/- 0.3 mW (9.7 to 10.3 mW)

* To increase the laser output power
Press [Yes] of the "Up?" dialog box.
* To decrease the laser output power
Press [No] of the "Up?" dialog box
and then press [Yes] of the "Down?" dialog box.

Repeat until the laser output power satisfies the specification.
(See Fig. 4-15, 4-16)
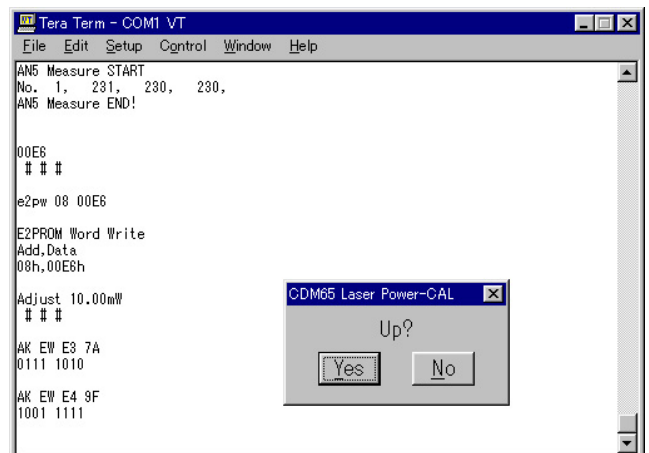
▲ Fig. 4-15
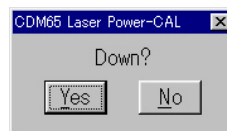
▲ Fig. 4-16
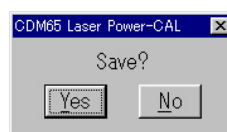
* When the setting value is determined
Press [No] of the "Up?" dialog box
and then press [No] of the "Down?" dialog box
and press [Yes] of the "Save?" dialog box. (See Fig. 4-17)

▲ Fig. 4-17

12) When the display shown in Fig. 4-18 appears, remove probe of the laser power meter and press OK.

▲ Fig. 4-18

13) Check that the message "Laser Power CAL completed!" appears. (See Fig. 4-19)
NG Judgment Result Indication
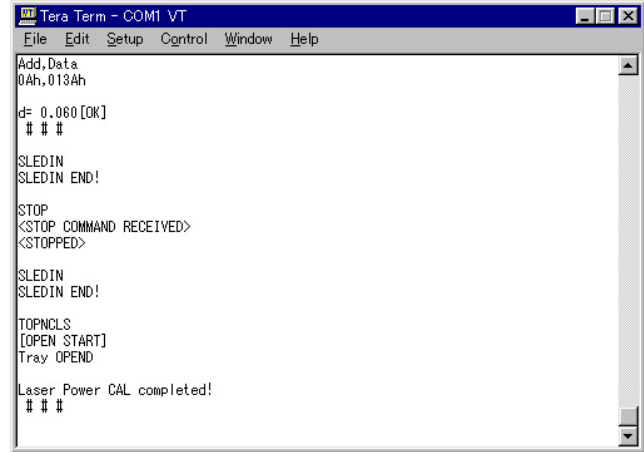
▲ Fig. 4-19

4-1-1. Sled Speed NG!

Contents : This message appears when the movement performance of sled is outside the specification.
Measure : Check if there is any abnormality in the slid drive circuit (IC171 peripheral) and the sled drive mechanism.

4-1-2. Power CAL NG!

Contents : This message appears when the laser emission intensity is outside the specification.
Measure : Check peripheral of CN101.
Replace KRM-220CAA.

4-2. CD/CD-R Playback Adjustment

1) Select the menu as follows. Control → Macro, and select 02cdr_S.ttl.
Press "Open".

2) Place the test CD disc PATD-012 on the tray as prompted by the display and press "OK". (See Fig. 4-20)

▲ Fig. 4-20

3) Press the "RESET" button (SW101) of the jig as prompted by the display.

4) As prompted by the message shown in Fig. 4-21, check that the waveform as shown in Fig. 4-22 appears on an oscilloscope.
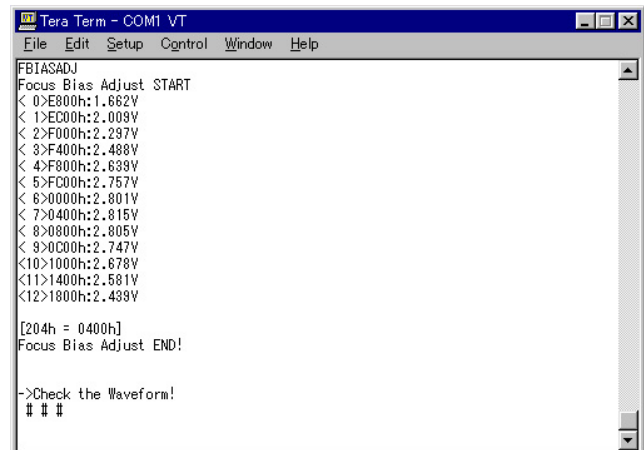
▲ Fig. 4-21

Note :The clear RF signal waveform means that the shape "@@" can be clearly distinguished at the center of the waveform.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns
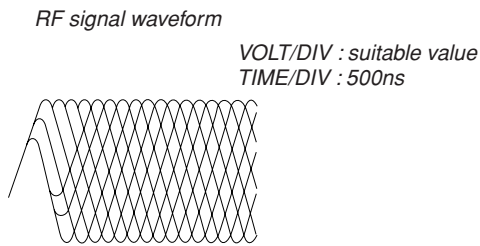
▲ Fig. 4-22

5)   As prompted by the message shown in Fig. 4-24, check that the waveform as shown in Fig. 4-23 appears on an oscilloscope.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns
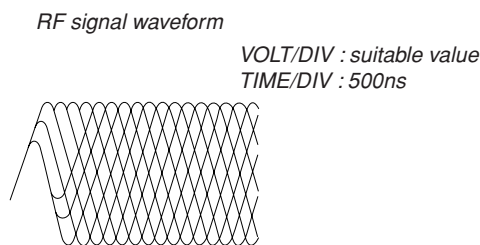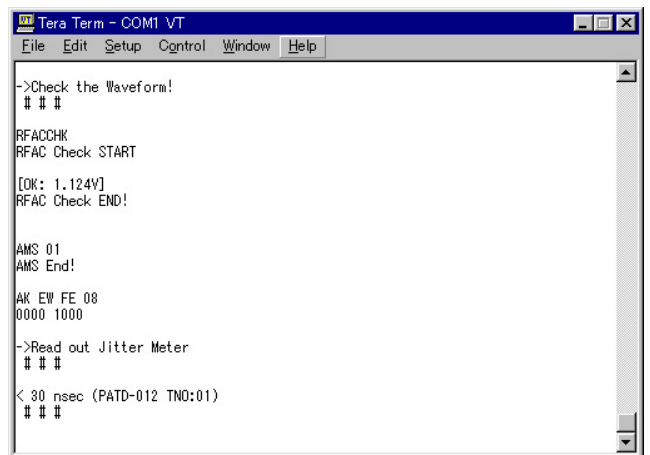
▲ Fig. 4-23

▲ Fig. 4-24

6)   As prompted by the message shown in Fig. 4-26, check that the waveform as shown in Fig. 4-25 appears on an oscilloscope.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns
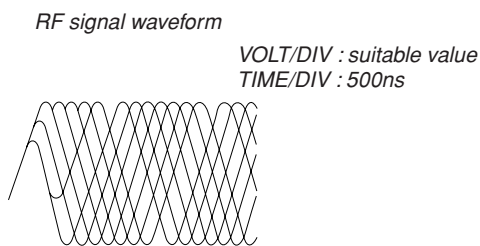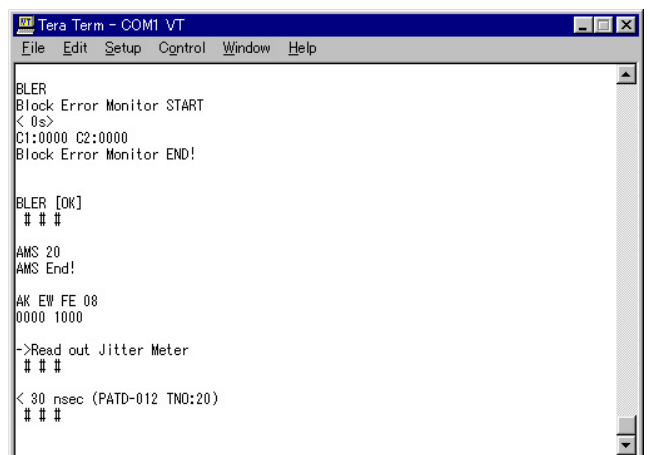
▲ Fig. 4-25

▲ Fig. 4-26

7)   Check that the message "CDR PB-CAL completed!" appears.

NG Judgment Result Indication

4-2-1.   Playback Measurement NG!

Contents : This message appears when the BLER (Block Error Rate) during playback is outside the specification.
Measure : Check if there is any abnormality in RBD1.
Replace KRM-220CAA.

4-3. CD-RW Playback Adjustment

1) Select the menu as follows. Control → Macro, and select 03cdr_S.ttl.
   Press "Open".

2) Place the test CD TCD-W091W on the tray as prompted by
   the display and press "OK". (See Fig. 4-30)

```
CDM65 CDRW PB-...  ☒
Set TCD-W091W
    OK
```

▲ Fig. 4-30

3) Press the "RESET" button (SW101) of the jig as prompted by the display.

4) As prompted by the message shown in Fig. 4-32, check that
   the waveform as shown in Fig. 4-31 appears on an oscilloscope.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns

▲ Fig. 4-31

```
Tera Term - COM1 VT                          _□×
File  Edit  Setup  Control  Window  Help
FCSG Adjust START

[F6h = 8Ch]
FCSG Adjust END!


STOP
<STOP COMMAND RECEIVED>
<FORCE STOPPED>

Press the RESET SW
 # # #

CDM65-RBD1 has connected with this PC (^^)

PLAY
<PLAY COMMAND RECEIVED>
 01Tr 00m00s
Now Playing

->Check the Waveform!
 # # #
```
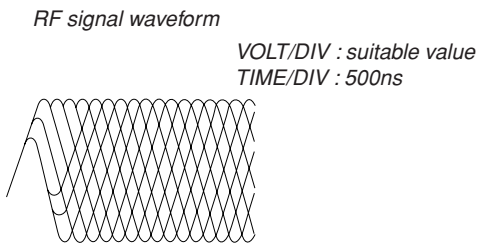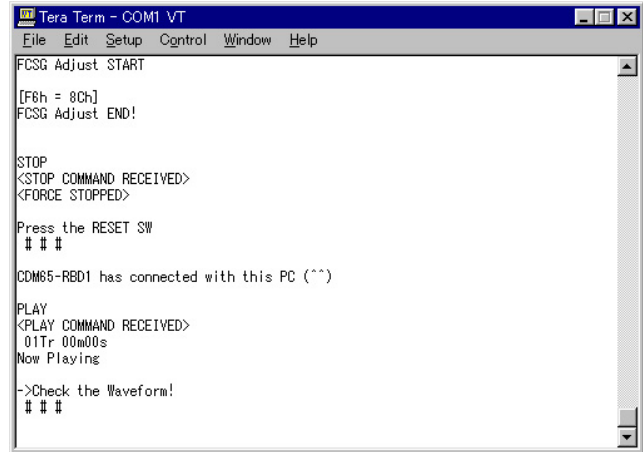
▲ Fig. 4-32

5) As prompted by the message shown in Fig. 4-34, check that
   the waveform as shown in Fig. 4-33 appears on an oscilloscope.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns

▲ Fig. 4-33

```
Tera Term - COM1 VT                          _□×
File  Edit  Setup  Control  Window  Help
->Check the Waveform!
 # # #

RFACCHK
RFAC Check START

[OK: 1.095V]
RFAC Check END!


AMS 01
AMS End!

AK EW FE 08
0000 1000

->Read out Jitter Meter
 # # #

< 30 nsec (TCD-W091W TNO:01)
 # # #
```
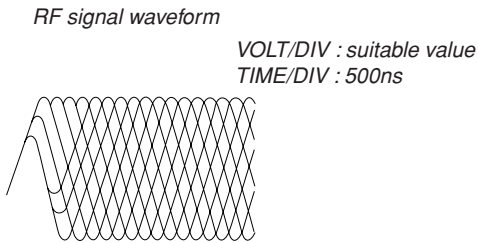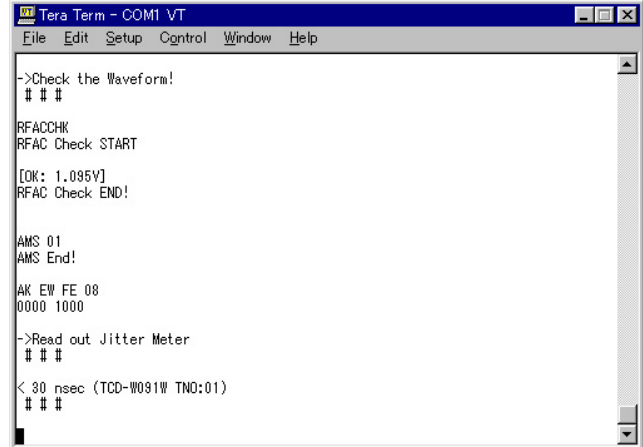
▲ Fig. 4-34

6) As prompted by the message shown in Fig. 4-36, check that
   the waveform as shown in Fig. 4-35 appears on an oscilloscope.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns

▲ Fig. 4-35

```
Tera Term - COM1 VT                          _□×
File  Edit  Setup  Control  Window  Help
BLER
Block Error Monitor START
< 0s>
C1:0002 C2:0000
Block Error Monitor END!


BLER [OK]
 # # #

AMS 16
AMS End!

AK EW FE 08
0000 1000

->Read out Jitter Meter
 # # #

< 30 nsec (TCD-W091W TNO:16)
 # # #
```
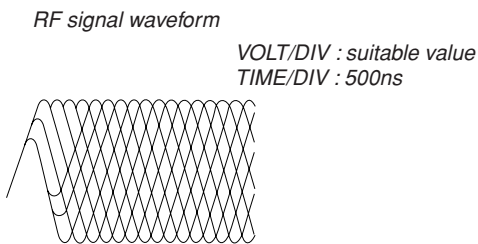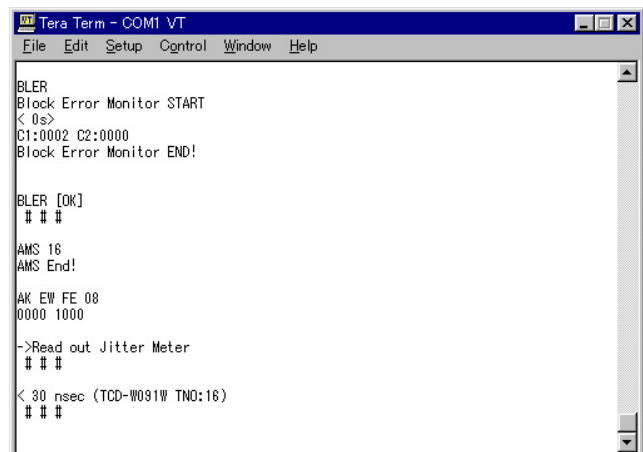
▲ Fig. 4-36

7) Check that the message "CDRW PB-CAL completed!" appears. (See Fig. 4-37)

NG Judgment Result Indication
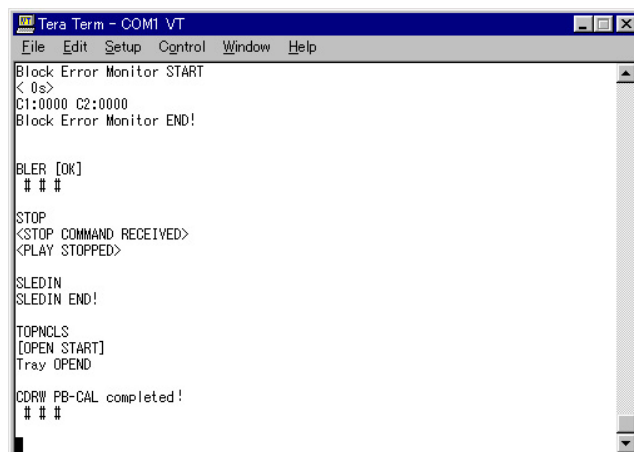
▲ Fig. 4-37

4-3-1. Playback Measurement NG!

Contents: This message appears when the BLER (Block Error Rate) during playback is outside the specification.
Measure : Check if there is any abnormality in RBD1.
Replace KRM-220CAA.

4-4. CD-R Recording Adjustment and Self Record/Playback Check

1) Select the menu as follows. Control → Macro, and select 04cdr_S.ttl.
Press "Open".

2) Place the test CD disc PATD-012 on the Deck A. Place the recording CD-R disc (see Note: 4-4-1) on the tray (Deck B) as prompted by the display and press "OK". (See Fig. 4-38)

Note : 4-4-1
The disc to be used in this step.

▲ Fig. 4-38

* Use the CD-R disc CRM74 for audio, that is manufactured by Sony.
* The disc that is used by this step cannot be used for the general purposes and for the purpose of operation check of the RCD series equipment. The disc that is used for the general purposes or for the purpose of operation check of the RCD series equipment, cannot be used in this step.
* If the recording is interrupted by any reasons during the recording operation (i.e., the WRITE POWER ON LED of the jig is lighting), the disc cannot be used any more in the subsequent step. Use the un-used brand new disc and repeat this step from the very beginning again.

3) When the disc that is used in step 2) is the disc that has been used in the electrical adjustment in the past. .... Press "Yes".

When the disc that is used in step 2) is a completely blank disc. ...... Press "No". (See Fig. 4-39)

Note: The recording CD-R disc can be used only for the electrical adjustment. The recording CD-R disc must be controlled so that it must not be used for any other applications.

▲ Fig. 4-39

4) Press the ▷ button of Deck A. After playback starts, press "OK". (See Fig. 4-40)

CDM65 CDR REC-CHECK   ✕

Play DeckA (1x), and Press OK

[OK]

▲ Fig. 4-40

5) When the message as shown in Fig. 4-41 appears some seconds later, select 4x of the test mode (refer to page 18, Play Speed Selection Mode (Deck A)) PLAYBACK SPEED. Then press the ▷ button of Deck A. After playback starts, press "OK".

CDM65 CDR REC-CHECK   ✕

Play DeckA (4x), and Press OK

[OK]
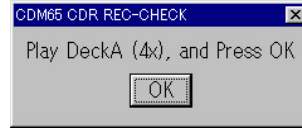
▲ Fig. 4-41

6) As prompted by the message shown in Fig. 4-43, check that the waveform as shown in Fig. 4-42 appears on an oscilloscope.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns

▲ Fig. 4-42

```
Tera Term - COM1 VT
File  Edit  Setup  Control  Window  Help

AMS 10
AMS End!

AK EW FE 08
0000 1000

ak ew fe 0c
0000 1100

->Read out Jitter Meter
 # # #

< 30 nsec (CRW74 TNO:10)
 # # #

BLER
Block Error Monitor START
< 0s>
C1:0001 C2:0000
Block Error Monitor END!
```
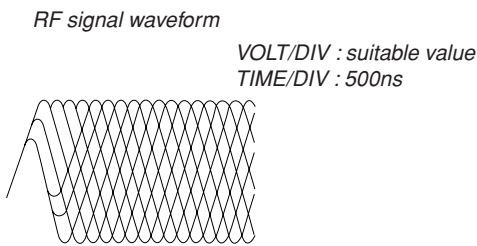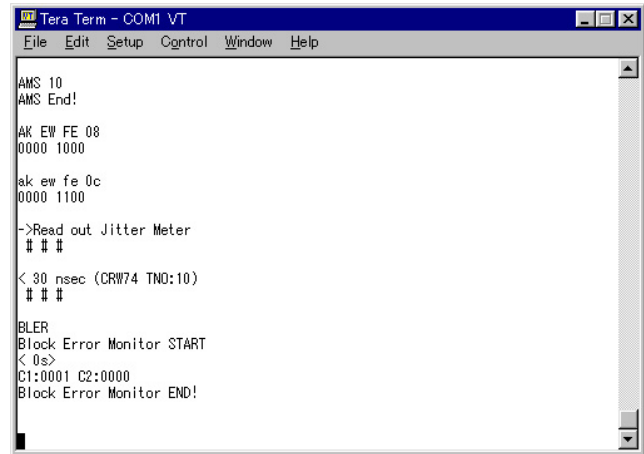
▲ Fig. 4-43

7) As prompted by the message shown in Fig. 4-45, check that the waveform as shown in Fig. 4-44 appears on an oscilloscope.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns

▲ Fig. 4-44

```
Tera Term - COM1 VT
File  Edit  Setup  Control  Window  Help

(AK LS OFFSET= 0.806 V(00A5h))
Itop= 3.380 V
 I11= 2.862 V
 ->Beta= 0.110
 -> m11= 0.847(=I11/Itop)
Beta Modulation Measure END!


AMS 12
AMS End!

AK EW FE 08
0000 1000

ak ew fe 0c
0000 1100

->Read out Jitter Meter
 # # #

< 30 nsec (CRW74 TNO:12)
 # # #
```
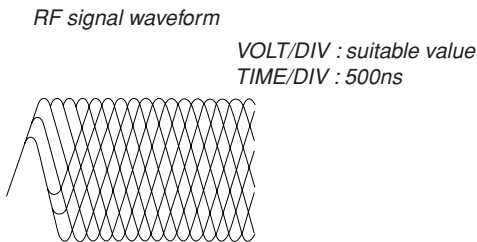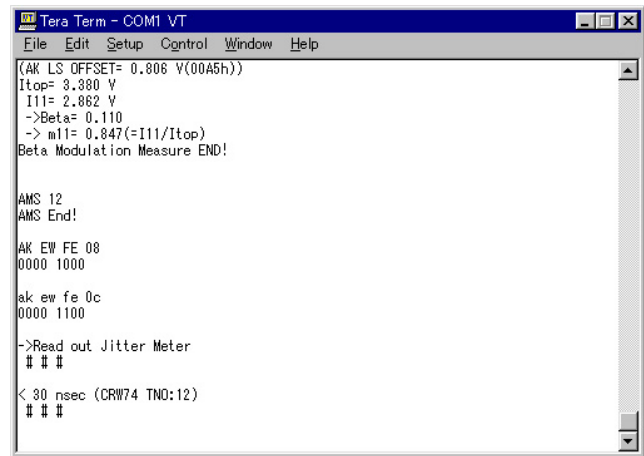
▲ Fig. 4-45

8) Check that the message "CDR REC-CHECK completed!" appears.
   NG Judgment Result Indication

4-4-1. CD-R Playback Measurement NG!

Contents : This message appears when the BLER (Block Error Rate) *Beta/m11 of the track that is recorded and played back, is outside the specification.
Measure : Check if there is any abnormality in RBD1.
Replace KRM-220CAA.

4-5. CD-RW Recording Adjustment and Self Record/Playback Check

1) Select the menu as follows. Control → Macro, and select 05cdrw_S.ttl.
   Press "Open".

2) Place the test CD disc PATD-012 on the Deck A. Place the recording CD-RW disc (See Note: 4-5-1) on the tray (Deck B) as prompted by the display and press "OK". (See Fig. 4-46)

   Note : 4-5-1
   The disc to be used in this step.

▲ Fig. 4-46

* Use the CD-RW disc CWM74 for audio, that is manufactured by Sony.
* The disc that is used by this step cannot be used for the general purposes and for the purpose of operation check of the RCD series equipment as it is. The disc that is used for the general purposes or for the purpose of operation check of the RCD series equipment, cannot be used in this step.
   When you want to use the CD-RW disc for other applications, erase the CD-RW disc.
* If the recording is interrupted by any reasons during the recording operation (i.e., the WRITE POWER ON LED of the jig is lighting), the disc cannot be used any more in the subsequent step. In such a case, erase the CD-RW disc and repeat this step from the very beginning again.

3) When the disc that is used in step 2) is the disc that has been used in the electrical adjustment in the past. .... Press "Yes".

   When the disc that is used in step 2) is a completely blank disc.
   .... Press "No". (See Fig. 4-47)

   Note : The recording CD-RW disc can be used only for the electrical adjustment. The recording CD-RW disc must be controlled so that it must not be used for any other applications.

▲ Fig. 4-47

4) Press the ▷ button of Deck A. After playback starts, press "OK". (See Fig. 4-48)

▲ Fig. 4-48

5) When the message as shown in Fig. 4-49 appears some seconds later, select 4x of the test mode (refer to page 18, Play Speed Selection Mode (Deck A)) PLAYBACK SPEED. Then press the ▷ button of Deck A. After playback starts, press "OK".
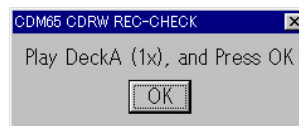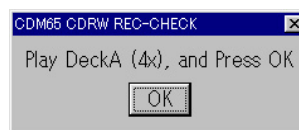
▲ Fig. 4-49

6) As prompted by the message shown in Fig. 4-51, check that the waveform as shown in Fig. 4-50 appears on an oscilloscope.

RF signal waveform

> *VOLT/DIV : suitable value*
> *TIME/DIV : 500ns*

▲ Fig. 4-50

```
Tera Term - COM1 VT
File  Edit  Setup  Control  Window  Help

(AK LS OFFSET= 0.762 V(009Ch))
Itop= 2.783 V
 I11= 1.762 V
 ->Beta= 0.046
 -> m11= 0.633(=I11/Itop)
Beta Modulation Measure END!


AMS 03
AMS End!

AK EW FE 08
0000 1000

ak ew fe 0c
0000 1100

->Read out Jitter Meter
 # # #

< 30 nsec (CWM74 TNO:03)
 # # #
```
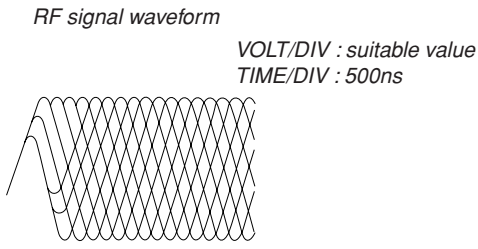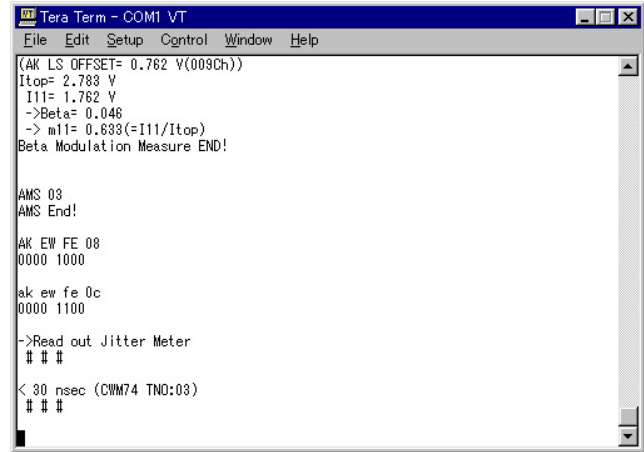
▲ Fig. 4-51

7) As prompted by the message shown on display, check that the waveform as shown in Fig. 4-52 appears on an oscilloscope.

RF signal waveform

> *VOLT/DIV : suitable value*
> *TIME/DIV : 500ns*
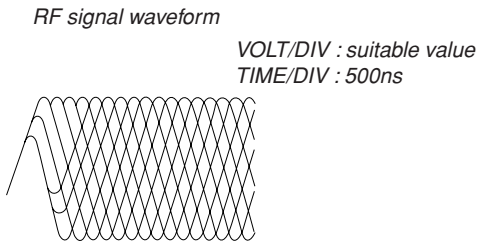
▲ Fig. 4-52

8) Check that the message "CDRW REC-CHECK completed!" appears. (See Fig. 4-53)

NG Judgment Result Indication

```
Tera Term - COM1 VT
File  Edit  Setup  Control  Window  Help


TMPMEASU
Temperature Measure START
TEMP = 1.676 V(comverted in 5V)
     = 36.3 degree Celsius
Temperature Measure END!


STOP
<STOP COMMAND RECEIVED>
<PLAY STOPPED>

SLEDIN
SLEDIN END!

TOPNCLS
[OPEN START]
Tray OPEND

CDRW REC-CHECK completed!
 # # #
```
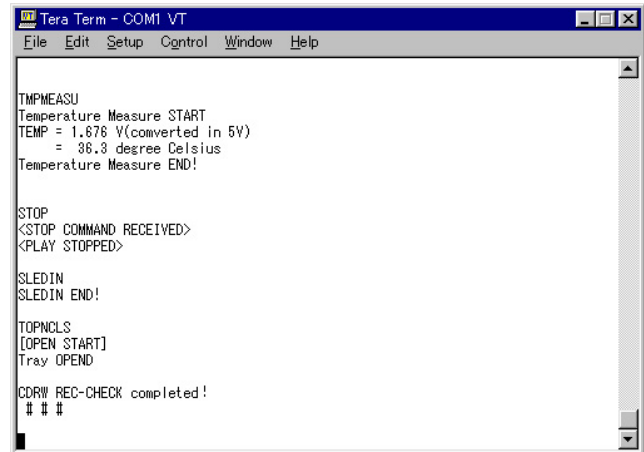
▲ Fig. 4-53

4-5-1.   CD-RW Playback Measurement NG!

Contents : This message appears when the BLER (Block Error Rate) *Beta/m11 of the track that is recorded and played back, is outside the specification.

Measure : Check if there is any abnormality in RBD1.

Replace KRM-220CAA.

4-6. VWDC Check

1) Select the menu as follows. Control → Macro, and select 06vwdc_S.ttl.
    Press "Open".

2) As prompted by the message shown in Fig. 4-54, remove the
    disc from the tray and press "OK".

▲ Fig. 4-54

3) Because this step saves the result of electrical adjustment in a
    file, there can be a case that the dialog as shown in Fig. 4-55
    appears.

    When you want to overwrite .... Press "Yes".
    When you want to create a new file .... Press "No".
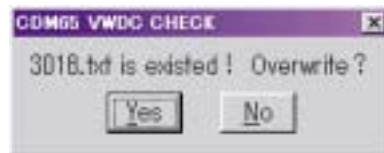
▲ Fig. 4-55

4) Check that the message "CDRW VWDC-CHECK completed!"
    appears. (See Fig. 4-56)

    NG Judgment Result Indication
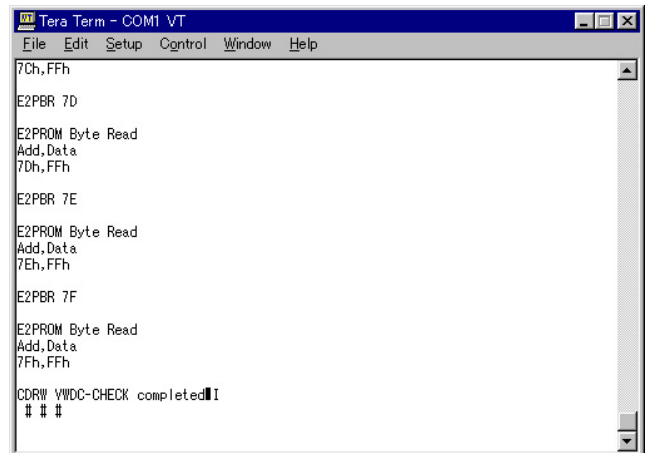
▲ Fig. 4-56

4-6-1. EEPROM Write NG!

Contents : This message appears when writing data into EEPROM fails.
Measure : When the steps of 01ldp_S.ttl through 05cdrw_S.ttl have no problem and the error occurs only in this step, it is assumed that
an error has occurred momentarily in the interface between PC and CDM64. Therefore, repeat execution of 06vwdc_S.ttl
again.

4-6-2. VWDC judge [Line Top - End] [NG]

Contents : This message appears when the VWDC value is outside the specification.
Measure : It is assumed that the optical laser unit has deteriorated. If this error occurs after the KRM-220CAA is replaced, the adjustment
error in the step of 01ldp_S.ttl is assumed. Therefore, repeat execution of steps of 01ldp_S.ttl through 05cdrw_S.ttl again. In
the cases other than above, check if the laser power adjustment is correctly performed or not, using LDPtestL_S.ttl.

4-7. NG Message List

Message	Cause
Tray OPEN NG!	The tray has not opened within the specified time.
Tray Close NG!	The tray has not closed within the specified time.
SLEDIN NG!	The sled has not moved toward inner circumference within the specified time.
SLEDOUT NG!	The sled has not moved toward outer circumference within the specified time.
RIDR NG!	The RID information could not be read out within the specified time.
SNread (1) NG!	The SN (1) information could not be read out within the specified time.
SNread (2) NG!	The SN (2) information could not be read out within the specified time.
SNread (3) NG!	The SN (3) information could not be read out within the specified time.
FBIASADJ NG!	The Focus Bias Adjustment has not completed within the specified time.
FEOSADJ NG!	The FE Offset Adjustment has not completed within the specified time.
FESAMPADJ NG!	The FE Amplitude Adjustment has not completed within the specified time.
RFACCHK NG!	The RFAC amplitude is abnormal or the adjustment has not completed within the specified time.
RPINWADJ1 NG!	The Read Power (during Write1) Adjustment has not completed within the specified time.
RPINWADJ2 NG!	The Read Power (during Write2) Adjustment has not completed within the specified time.
SERVOSET NG!	The Servo Setting has not completed within the specified time.
TSa NG!	The ATIME Search has not completed within the specified time.
PLAYSW NG!	The Play operation has not started within the specified time.
STOP NG!	The Stop operation has not completed within the specified time.
AMS NG!	The AMS operation has not completed within the specified time.
ATIPPLAY NG!	The ATIP Play operation has not started within the specified time.
END TNO get NG!	The record-end track information could not be obtained within the specified time.
LEADOUT info.get NG!	The record-end time information could not be obtained within the specified time.
Invalid EndTrackNo./LeadoutTime !	The illegal record-end track and its time information were obtained.
Use the Blank disc	The disc exceeding the allowable limit is used.
DIR unlock!	The equipment could not be synchronized with the signal connected to DIN2.
RWP NG!	The CD-R Write Power setting has not completed within the specified time.
RWWP NG!	The CD-RW Write Power setting has not completed within the specified time.
REC NG!	The record operation could not be started within the specified time.

5. Operation Check

5-1. Erasing the Error History

1) Select the menu as follows. Control → Macro, and select ErrHistClear.ttl.
   Press "Open". (See Fig. 5-1, 5-2)

▲ Fig. 5-1
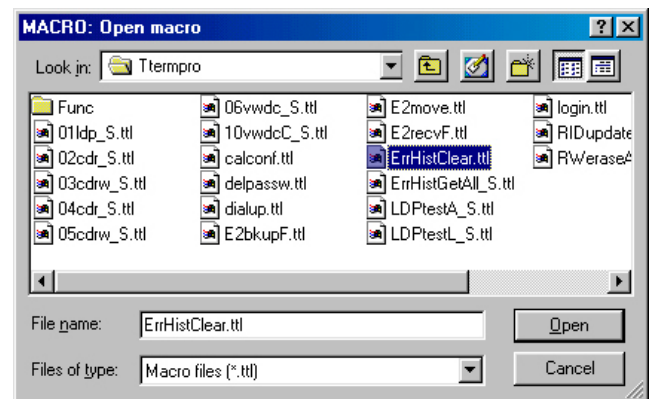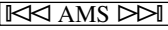
▲ Fig. 5-2

2) Press the "RESET" button (SW101) of the jig as prompted by the display.

3) Check that the message "completed!" appears. (See Fig. 5-3)
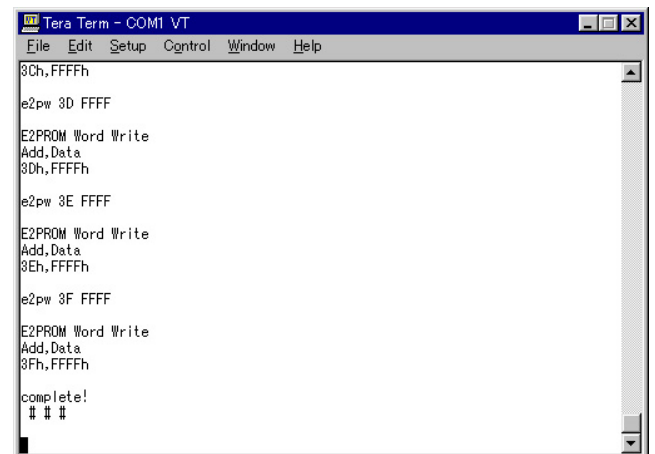
▲ Fig. 5-3

5-2. Playback Check using TCD-W032W

1) Install the CDM65 in the equipment and install the TCD-W032W in Deck B.
2) Rotate the ⏮ AMS ⏭ (Deck B) knob to select the track 16. Start playback by pressing the same knob or by pressing the ▷ (Deck B) button.
3) Perform playback for 10 seconds or more and confirm that there is no abnormality such as sound skipping and others.

5-3. Updating the RID Code

When the IC501 firmware is upgraded, the following operation may be required.

1) Select the menu as follows. Control → Macro, and select RIDupdate.ttl.
Press "Open". (See Fig. 5-4, 5-5)
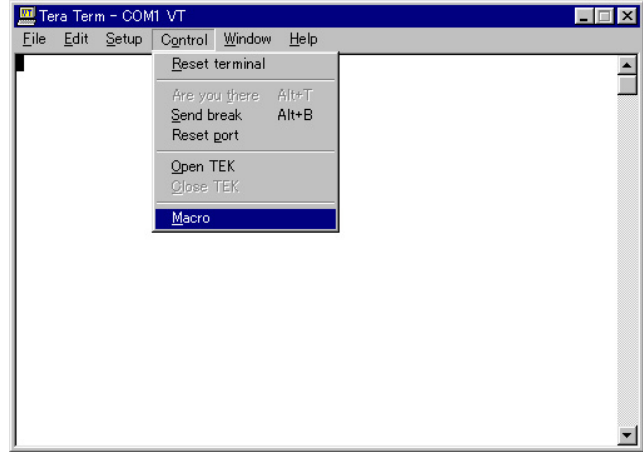
▲ Fig. 5-4
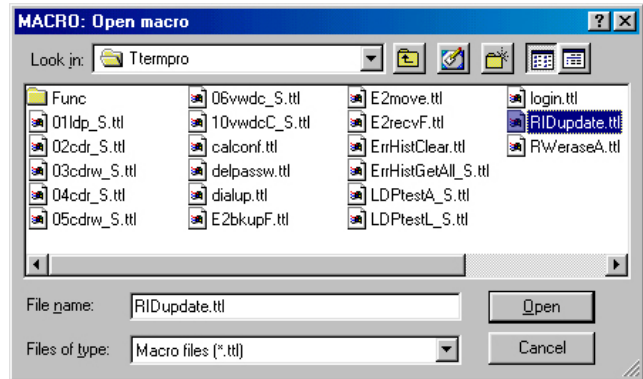
▲ Fig. 5-5

2) Press the "RESET" button (SW101) of the jig as prompted by the display.
3) Check that the message "completed!" appears.

Supplementary Information

Method to Erase the CD-RW Disc

1) Select the menu as follows. Control → Macro, and select RWeraseA.ttl.
    Press "Open". (See Fig. A-1, A-2)
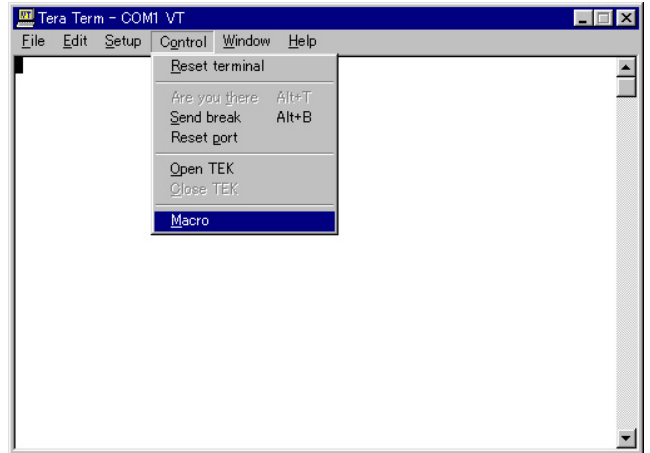
▲ Fig. A-1
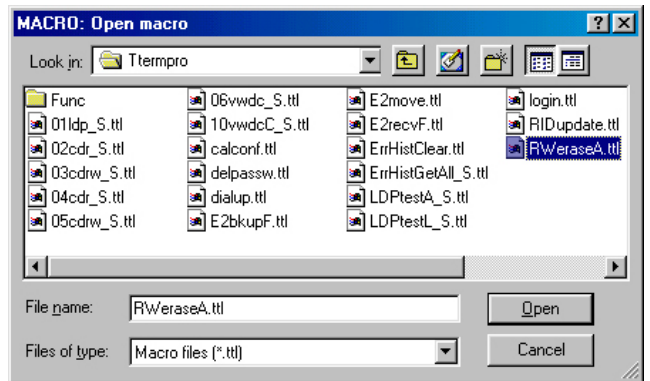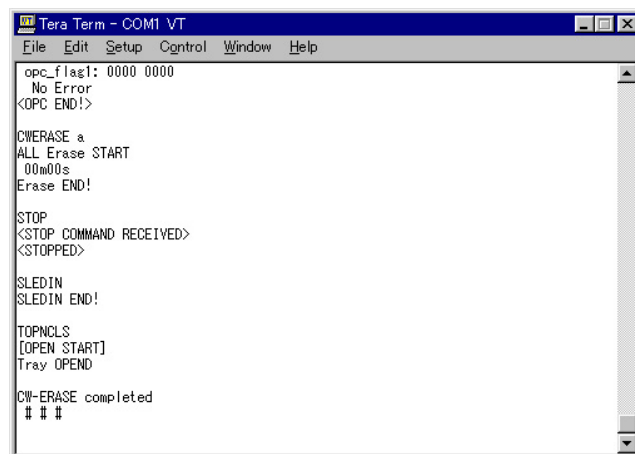
▲ Fig. A-2

2) Press the "RESET" button (SW101) of the jig as prompted by the display. (See Fig. A-3)
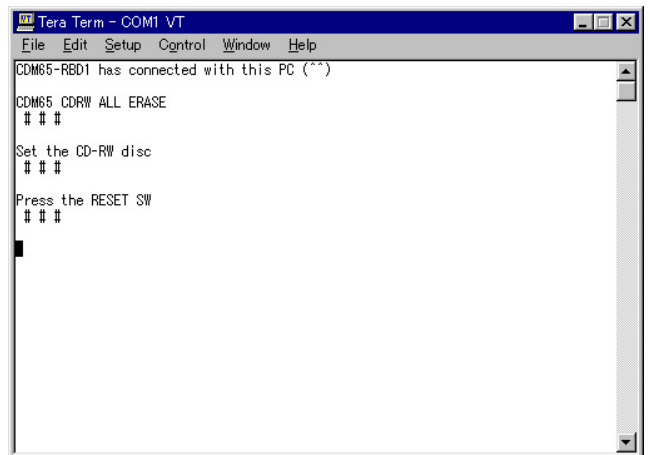
▲ Fig. A-3

3) Check that the time display as shown by the arrow mark in Fig. A-4 is updated after a while.


```
opc_flag1: 0000 0000
  No Error
<OPC END!>

CWERASE a
ALL Erase START
  00m00s
Erase END!

STOP
<STOP COMMAND RECEIVED>
<STOPPED>

SLEDIN
SLEDIN END!

TOPNCLS
[OPEN START]
Tray OPEND

CW-ERASE completed
 # # #
```

▲ Fig. A-4

4) When update of time display is stopped and rotation of spindle is stopped, press the STOP button (SW501) of the Jig, and then press the EJECT button (SW508) of the jig to remove the disc.

SECTION 7
DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For schematic diagrams.
Note:
• All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
• All resistors are in Ω and ¹/₄ W or less unless otherwise specified.
• % : indicates tolerance.
• △ : internal component.
• ☐ : panel designation.
• ⊢wwⱶ : fusible resistor.

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

• ▬▬▬ : B+ Line.
• ▬ ▬ ▬ : B– Line.
• ▭ : adjustment for repair.
• AC voltage readings in the bias oscillator with a level meter.
• Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark : STOP
  (   ) : PLAY
  <   ≳ REC (CD-R only)
• Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
• Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
• Circled numbers refer to waveforms.

• Signal path.
  ⇨ : LINE (ANALOG)
  ⇨ : CD PLAY (ANALOG)
  ⇨ : CD PLAY (DIGITAL)
  ⇨ : CD REC

For printed wiring boards.
Note:

• ▬▬ : Pattern from the side which enables seeing.
(The other layers' patterns are not indicated.)

Caution:
Pattern face side: Parts on the pattern face side seen from the
(Side B)   pattern face are indicated.
Parts face side: Parts on the parts face side seen from the
(Side A)   parts face are indicated.

• **Indication of transistor**

C
Q   —These are omitted
B E

BCE   —These are omitted

7-1. CIRCUIT BOARD LOCATION

CLAMP MOTOR board
BD board
IN SW board
SENSOR 2 board
SENSOR board
OUT SW board
INIT/COUNT SW board
LOAD MOTOR board
CONNECTOR board
CD-R board

AC board
LED board
POWER SW board
RM board
HP board
CD SW board
DISPLAY board
MAIN board

• **WAVEFORMS**

– BD BOARD –

① IC101 ㊴ FE

0.1 Vp-p
VOL/DIV : 0.05V AC
TIME/DIV : 2msec

② IC101 ㊶ TE

0.2 Vp-p
VOL/DIV : 0.1V AC
TIME/DIV : 2msec

③ IC101 ㊸ RFDC

0.6 Vp-p
VOL/DIV : 0.2V AC
TIME/DIV : 1µsec

④ IC101 ㊿ RFAC

1.0 Vp-p
VOL/DIV : 0.5V AC
TIME/DIV : 1µsec

⑤ IC101 ⑫

3.7 Vp-p
33.8MHz
VOL/DIV : 1V AC
TIME/DIV : 20nsec

– CD-R BOARD –

① IC101 ⑨ TE(TP TEO)

1.5 Vp-p
VOL/DIV : 0.5V AC
TIME/DIV : 1msec

② IC101 ⑩ FE(TP FEO)

1.2 Vp-p
VOL/DIV : 0.5V AC
TIME/DIV : 1msec

③ IC101 ㊽ MCLK1

4.4 Vp-p
34.5744MHz
VOL/DIV : 2V AC
TIME/DIV : 20nsec

④ IC101 ⑧⓪ EQRF (TP RFAC)

1.0 Vp-p
VOL/DIV : 0.5V AC
TIME/DIV : 500nsec

⑤ IC201 ㊽ XTAL

5.8 Vp-p
33.8688MHz
VOL/DIV : 2V AC
TIME/DIV : 20nsec

⑥ IC204 ④

5.4 Vp-p
34.5744MHz
VOL/DIV : 2V AC
TIME/DIV : 20nsec

– MAIN BOARD –

① IC1 ㊳ X2

3.0Vp-p
20MHz
VOL/DIV : 1V AC
TIME/DIV : 20nsec

– DISPLAY BOARD –

① IC760 ⑯ OSCO

5.0Vp-p
0.42 µsec
VOL/DIV : 2V AC
TIME/DIV : 0.2µsec

RCD-W222ES

7-2. BLOCK DIAGRAMS
– BD SECTION –

EQ AWITCH
IC104

DIGITAL SIGNAL PROCESSOR,
DIGITAL FILTER, D/A CONVERTER
IC101 (1/2)

IC201
3.3V REG
3.3V CD+5V

WAVE SHAPER
IC105

OPTIVCAL PICK-UP BLOCK
(A-MAX.3)

RF AMP, FOCUS/TRACKING ERROR AMP
IC103

FILTER

D/A INTERFACE
PCMD NC
BCK NC
LRCK NC
C2PO NC

16K RAM

INTERNAL BUS

RF SUMMING AMP
RF EQ AMP
RFAC

Σ A-D
DC AMP
RFDCO
RFDCI

FOCUS ERROR AMP
FE
FEI

TRACKING ERROR AMP
TE

I-V AMP

F I-V AMP
E I-V AMP

RFAC
ASYMMETRY CORRECTION
DIGITAL PLL
EFM DEMODULATOR

ASYI
ASYO

DIGITAL OUT
DOUT

D OUT (CD) (A) MAIN SECTION (Page 54)

ERROR CORRECTOR

DIGITAL CLV
SUBCODE PROCESSOR
SERVO AUTO SEQUENCER
SERVO INTERFACE

TO MIRR/DFCT/FOK DETECTOR

CLOCK GENERATOR
XTAI
XTAO
X101 16.9344MHz

CPU INTERFACE

MDP XRST XLON DATA XLAT CLOK SENS SCOR SQSO SQCK SCLK COUT SSTP EMPH WFCK GFS XTSL

SO XLT SK

SI,SO,SK SSS (B) MAIN SECTION (Page54)

LASER DIODE
PD LD

LD DRIVE Q101

APC LD AMP
APC PD AMP

PD

FOCUS/TRACKING COIL DRIVE, SPINDLE/SLED MOTOR DRIVE
IC102

M101 SPINDLE MOTOR
VO4+ VO4-
MOTOR DRIVE IN4
SW

M102 SLED MOTOR
VO3+ VO3-
MOTOR DRIVE IN3+ IN3-

DIGITAL SERVO PROCESSOR
IC101 (2/2)

SE TE FE RFDC

A/D CONVERTER

FOCUS/TRACKING/SLED PWM GENERATOR
FOCUS/TRACKING/SLED SERVO DSP

MIRR/DFCT/FOK DETECTOR
FOK NC
MIRR NC
DFCT NC

SFDR SRDR TFDR TRDR FFDR FRDR

TRACKING COIL
T- T+
VO2+ VO2-
COIL DRIVE IN2+ IN2-

FOCUS COIL
F- F+
VO1+ VO1-
COIL DRIVE IN1+ IN1-

TO SERVO INTERFACE

STBY BDRST

SW
(ON : When the optical pick-up is inner position.)

SYSTEM CONTROLLER (CD MECHANISM CONTROL)
IC1 (1/2)

SQCLK SUBQ SCOR SENS

DOOR_SW S702 (LID) (OUT/MIDOUT SW)
MIDOUT SW S701 (MIDOUT)
OUT_SW S708 (OUT)

MIDIN SW S703 (MIDIN) (IN/MIDIN SW)
IN_SW S704 (IN)

INIT_SW S705 (INIT) (INIT/COUNT SW)
COUNT_SW S706 (COUNT)

DSENS Q701 Q703 D704 CD+5V
(DISK IN DETECT SENSOR)

ENCODER1 E1
ENCODER2 E2
ENCODER3 E3
S707 ROTARY ENCODER (DISK TRAY ADDRESS DETECT)

X4 CTRL1

PWM1 PWM1
PWM2 PWM2
PWM3 PWM3
LDON LDON

XLT XLT
SK SK CLK
SO SD DATA
SI SI NC

CLP_POS IN1 OUT1
CLP_NEG IN2 OUT2
M701 ELEVATOR UP/DOWN MOTOR

ELEVATOR UP/DOWN MOTOR DRIVE
IC701

LOD_NEG IN1 OUT1
LOD-POS IN2 OUT2
M702 LOADING MOTOR

LOADING MOTOR DRIVE
IC702

• SIGNAL PATH
: CD PLAY (ANALOG)
: CD PLAY (DIGITAL)

– CD-R SECTION –

RCD-W222ES

RCD-W222ES

7-5. SCHEMATIC DIAGRAM – CD-R (3/3) SECTION –   • See page 79 for IC Pin Function Description.

RCD-W222ES

【CD–R BOARD】(SIDE A)
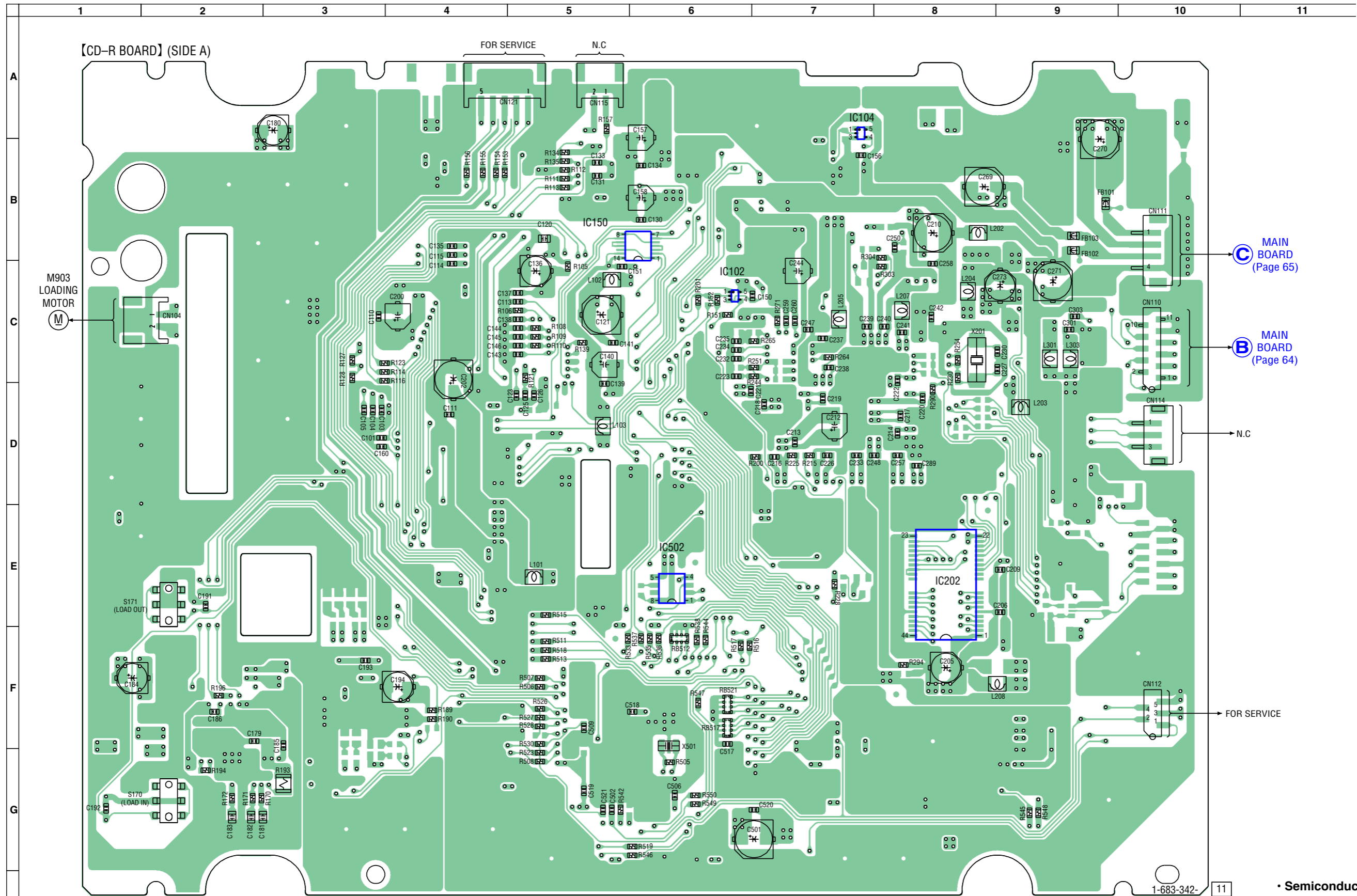
· Semiconductor
Location

Ref. No.	Location
IC102	C-6
IC104	A-7
IC150	B-6
IC202	E-8
IC502	E-6

【CD–R BOARD】(SIDE B)

M902
SLED
MOTOR
Ⓜ
THERMO
SENSOR

M901
SPINDLE
MOTOR
Ⓜ

OPTICAL PICK-UP
BLOCK
(KRS–220C)

1-683-342- 11
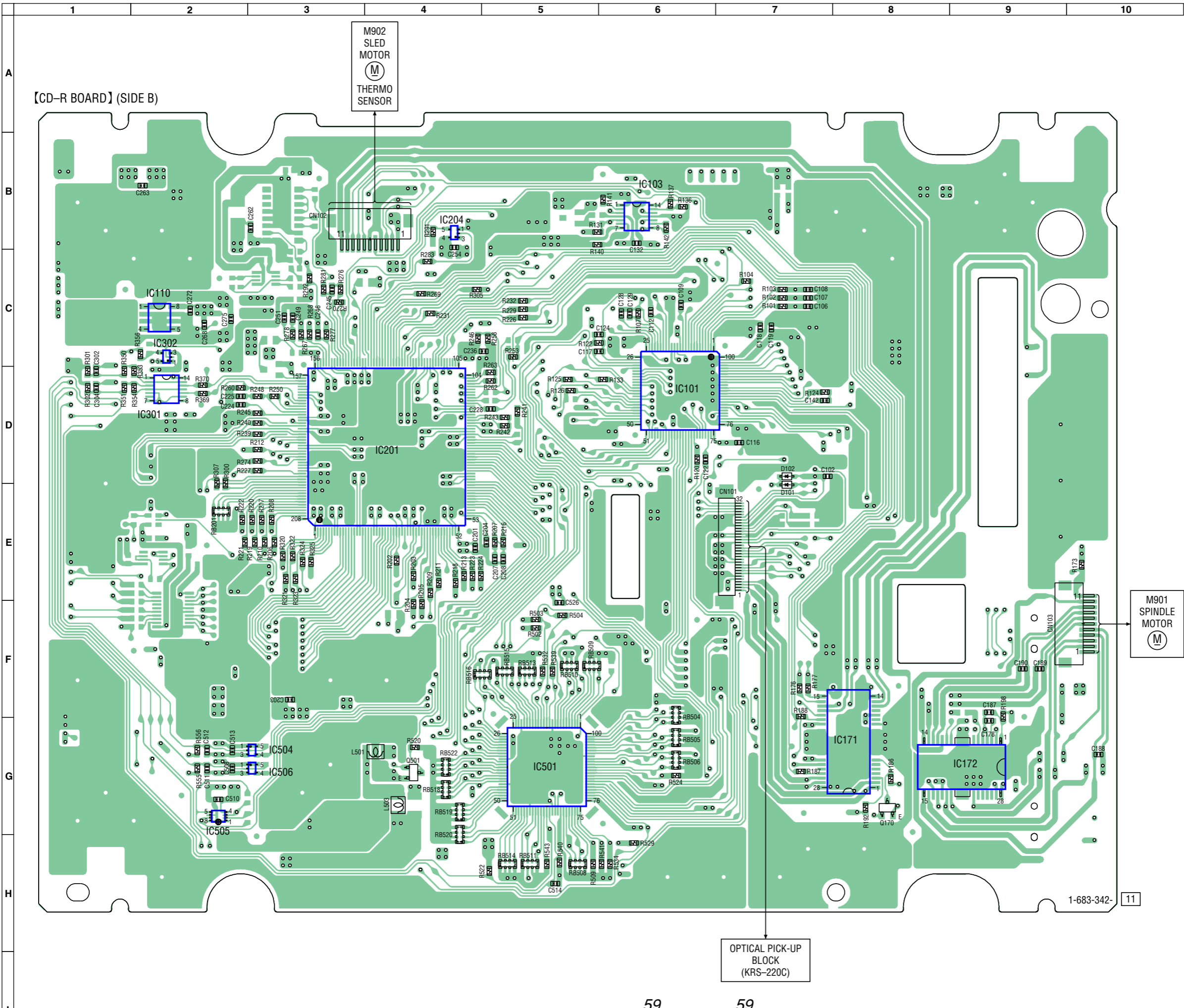
**• Semiconductor
Location**

Ref. No.	Location
D101	D-7
D102	D-7
IC101	D-6
IC103	B-6
IC110	C-2
IC171	G-8
IC172	G-9
IC201	D-4
IC204	B-4
IC301	D-2
IC302	C-2
IC501	G-5
IC504	G-3
IC505	G-2
IC506	G-3
Q170	G-8
Q501	G-4

59   59

7-7. PRINTED WIRING BOARD – BD SECTION – • See page 51 for Circuit Boards Location.

【BD BOARD】(SIDE A)

【BD BOARD】(SIDE B)

M101 (SPINDLE MOTOR)

IC102

IC104

IC101

IC103

RV101

IC105

X201

IC201

CN101

CN102

OPTICAL PICK-UP BLOCK
OP ASSY(A-MAX,3)

M102 (SLED MOTOR)

1-683-588-

1-683-588-
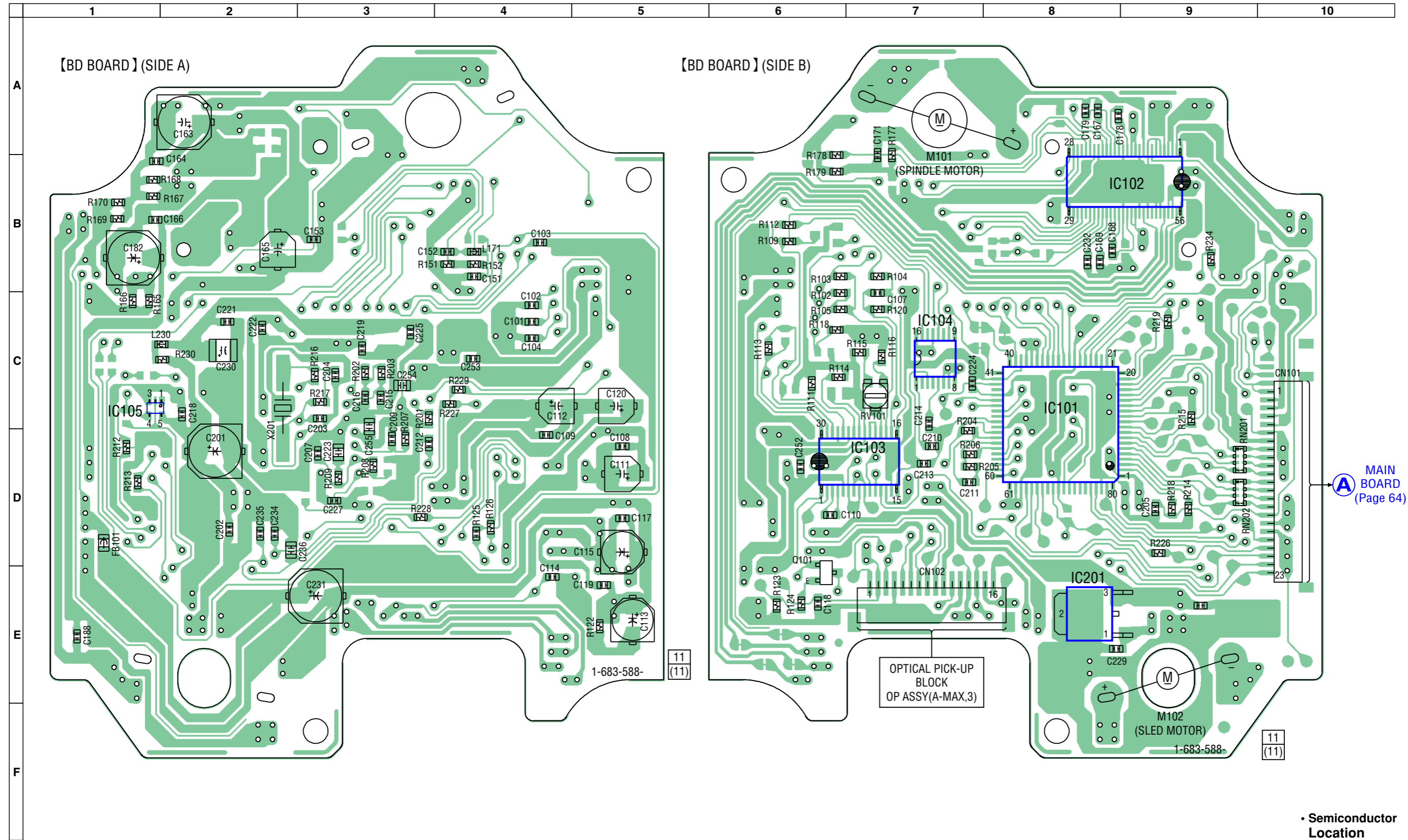
• Semiconductor Location

Ref. No.	Location
IC101	C-8
IC102	B-9
IC103	D-7
IC104	C-7
IC105	C-1
IC201	E-8
Q101	E-6

7-8. SCHEMATIC DIAGRAM – BD SECTION – • See page 72 for IC Pin Function Description.

【BD BOARD】

IC104
TC74HC4052
AFT(EL)
SPINDLE SERVO
(2/4 SPEED)

IC105
MC74VHC1G0
4DFT1
WAVE SHAPER

IC103
CXA2581N-T4
RF AMP

E-F
BALANCE

IC101
CXD3068Q
DIGITAL SERVO
DIGITAL SIGNAL
PROCESSOR

IC102
AN41050
FOCUS/TRACKING COIL DRIVE
SLED/SPINDLE MOTOR DRIVE

IC201
BA033FP-E2
+3.3V REG

Q101
2SB710A-RTX
POWER
CONTROL

OPTICAL
PICK-UP
BLOCK
(A-MAX.3)

IC B/D

M102
SLED
MOTOR

M101
SPINDLE
MOTOR

CN101
23P

CN102
16P

MAIN
BOARD
(1/2)
(Page 66)

RCD-W222ES

7-9.   PRINTED WIRING BOARD – CDM SECTION –   • See page 51 for Circuit Boards Location.

【SENSOR 2 BOARD】
CN714
Q703
1-675-727-

【OUT SW BOARD】
S702 (LID)
S701 (MID OUT)
S708 (OUT)
CN715
CN709
1-675-725-

【INIT/COUNT SW BOARD】
S706 (COUNT)
S705 (INIT)
CN711
1-675-724-

【IN SW BOARD】
S703 (MID IN)
S704 (IN)
CN710
1-675-723-

S707
ROTARY ENCODER
(DISC TRAY ADDRESS DETECT)

【CONNECTOR BOARD】
Q701
R709
R707
R708
CN703
JW713
CN702
CN701
JW711   JW710
JW712
CN706
JW716
CN705
JW715
CN707
CN704
JW717
1-675-722-

【SENSOR BOARD】
D704
R711
CN708
1-675-726-

【LOAD MOTOR BOARD】
CN713
C703
C704
C712
C705
M702 LOADING MOTOR
IC702
JW706
JW703
JW705
JW704
R704
D702
R703
1-675-728-

【CLAMP MOTOR BOARD】
M701 ELEVATOR UP/DOWN MOTOR
C711
R701
JW708
C706
C702
JW701
D701
R702
JW702
CN712
IC701
1-675-729-

MAIN BOARD (Page 65) E

MAIN BOARD (Page 64) D

• **Semiconductor Location**

Ref. No.	Location
D701	E-9
D702	C-8
D704	A-7
IC701	E-8
IC702	B-9
Q701	A-5
Q703	A-2

7-10. SCHEMATIC DIAGRAM – CDM SECTION –

MAIN BOARD (1/2) (Page 66)

OUT SW
MID OUT SW
IN SW
GND
MID IN SW
7V
MGND
INIT SW
CLP_POS
E2
CLP_NEG
E3
COUNT SW
5V
DOOR SW
E1
DSENSE

CN701 17P

CN707 5P AMP MT L

CONNECTOR BOARD

SENSOR BOARD

D704 GL528VS1
R711 680

CN708 2P AMP MT L

CN702 2P AMP L

SENSOR 2 BOARD

Q703 PT483F1 DISC IN DETECT SENSOR
0.8

CN714 2P AMP S

OUT SW BOARD

CN715 2P AMP MT L
CN709 5P AMP MT L
CN703 5P AMP L

S702 (LID)
S701 (MID OUT)
S708 (OUT)

IN SW BOARD

CN710 3P AMP MT L
CN704 3P AMP L

S703 (MID IN)
S704 (IN)

INIT/COUNT SW BOARD

CN711 3P AMP L
CN705 3P AMP L

S705 (INIT)
S706 (COUNT)

CN706 4P AMP L

S707 ROTARY ENCODER (DISC TRAY ADDRESS DETECT)

R709 10k

R707 3 9k

R708 1k
5.1
0.7

Q701 DTC114ESA INVERTER

M701 ELEVATOR UP/DOWN MOTOR

CLAMP MOTOR BOARD

VCC OUT2 IN1 GND VREF IN2 OUT1 VCC
IC701 M54641 ELEVATOR UP/DOWN MOTOR DRIVE
IC B/D

5.1 0 5.1 4 5.1 0 7

C711 0.01
R702 47
R701 330
D701 MTZJ 3.6B
C702 10 50V
C706 0.01
C701 0.01

CN712 5P AMP MT S

LOAD MOTOR BOARD

VCC OUT2 IN1 GND VREF IN2 OUT1 VCC
IC702 M54641 LOADING MOTOR DRIVE
IC B/D

7 0 5.1 4 5.1 0 7

M702 LOADING MOTOR

C712 0.01
R704 47
R703 330
D702 MTZJ 5.1B
C705 0.01
C704 10 50V
C703 0.01

CN713 5P AMP MT S

7V
LOD_POS
LOD_NEG
MGND
7V

E MAIN BOARD (1/2) (Page 66)

63   63

RCD-W222ES

【MAIN BOARD】(SIDE A)

• Semiconductor Location

Ref. No.	Location
D111	E-8
D112	E-8
D181	E-4
D211	E-8
D212	E-8
D310	E-8
D426	G-3
D462	F-1
D471	D-1
D472	D-1
D473	E-1
D493	C-2
IC1	F-5
IC100	G-5
IC470	E-2
IC480	E-2
IC500	F-7
IC631	B-5
IC671	B-4
Q380	D-5
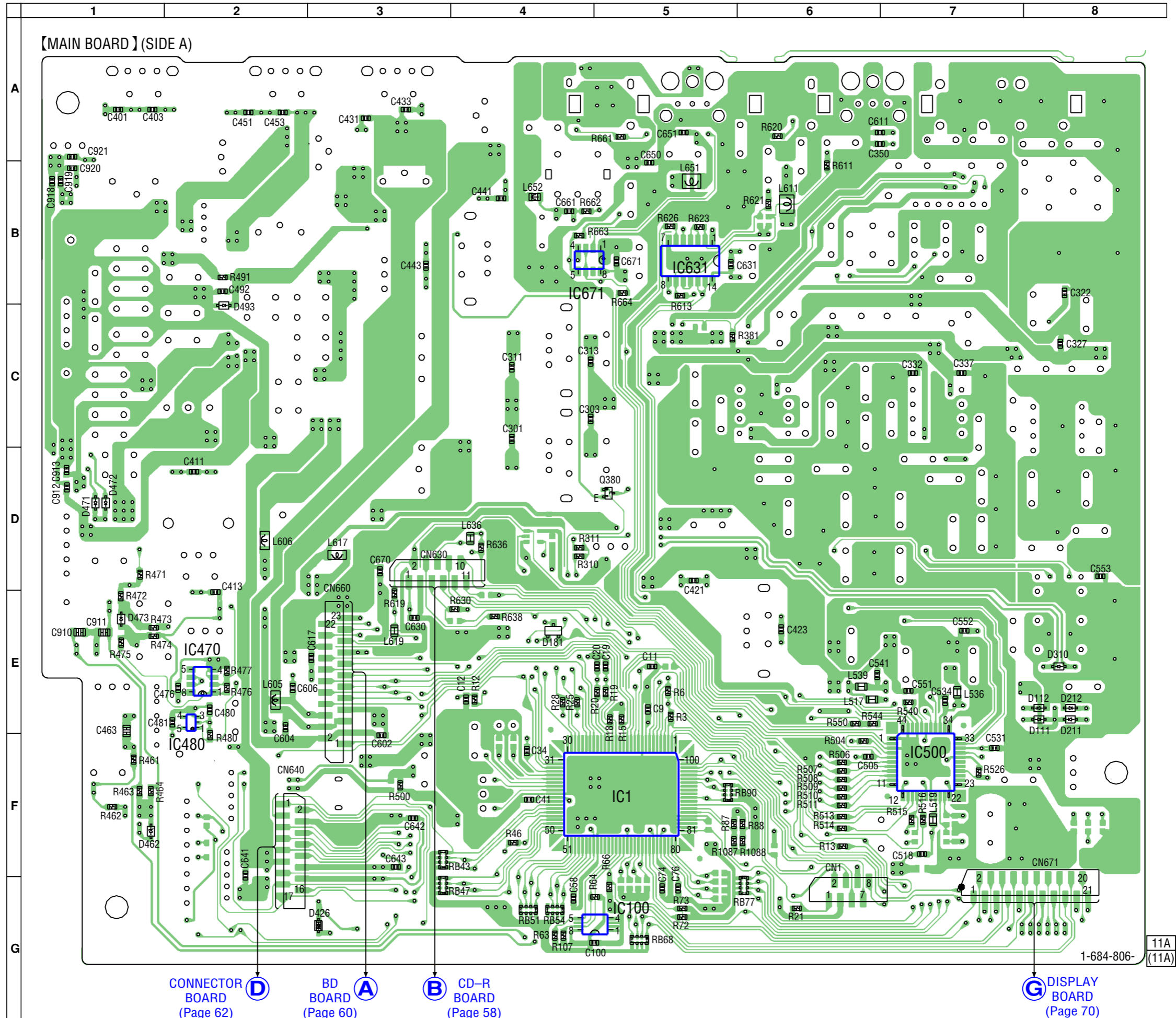
CONNECTOR BOARD (Page 62) — D

BD BOARD (Page 60) — A

CD-R BOARD (Page 58) — B

DISPLAY BOARD (Page 70) — G

1-684-806-

11A
(11A)

• Semiconductor Location

Ref. No.	Location
D301	C-8
D302	C-8
D303	D-5
D311	C-8
D312	C-8
D313	C-5
D401	C-8
D402	D-8
D403	D-8
D404	D-8
D411	D-8
D412	D-8
D431	D-7
D432	D-7
D433	C-7
D434	C-7
D451	C-7
D452	C-7
D453	C-7
D454	C-7
D461	E-8
D491	C-8
D492	C-8
IC300	D-5
IC310	C-5
IC320	D-2
IC330	D-4
IC340	D-2
IC400	A-8
IC410	E-8
IC420	E-4
IC430	A-6
IC440	B-6
IC450	A-7
IC460	F-8
IC611	A-3
IC651	A-4
Q181	B-3
Q281	B-2
Q310	E-5

1-684-806-

65   65

7-12. SCHEMATIC DIAGRAM – MAIN (1/2) SECTION –
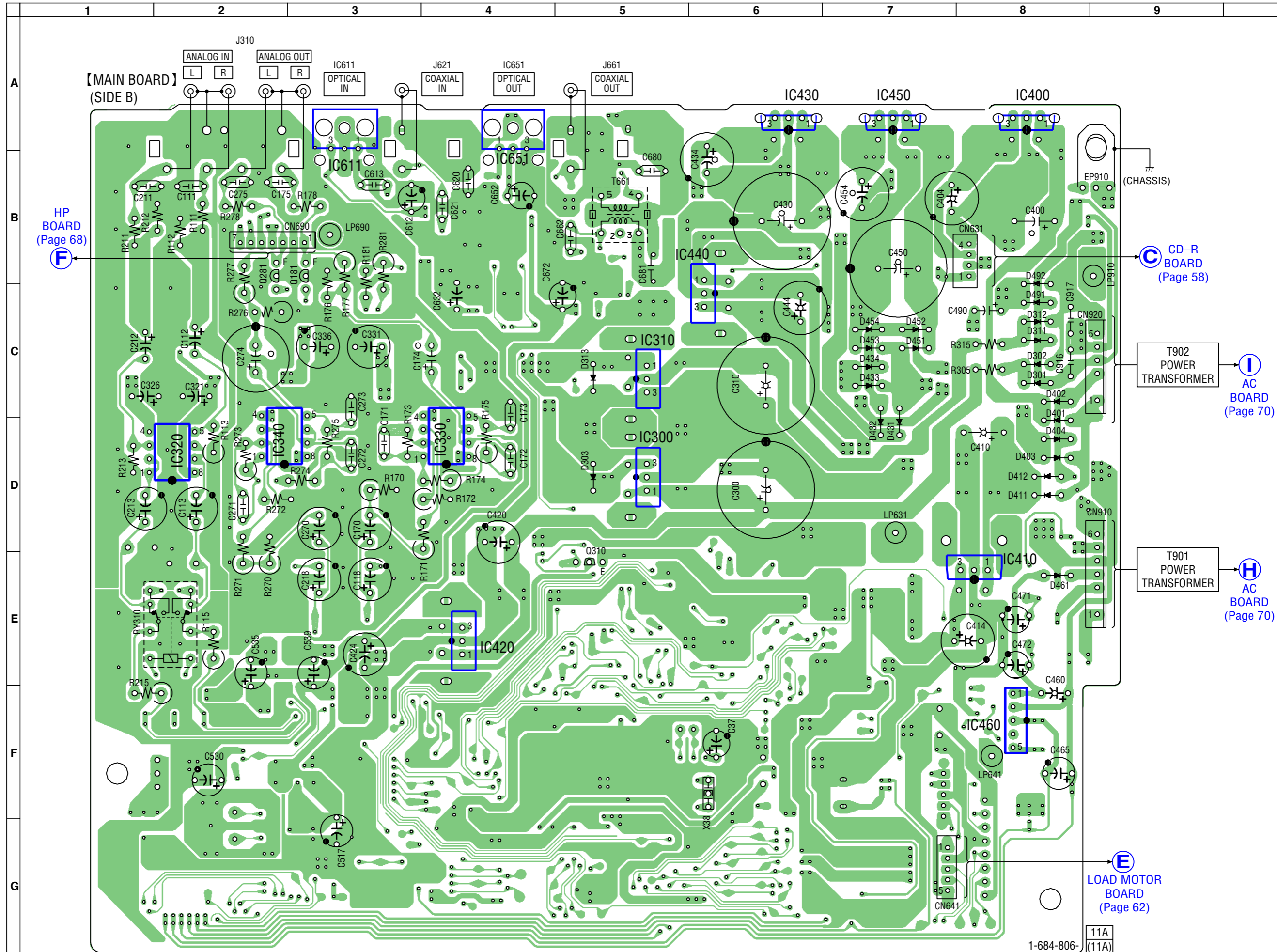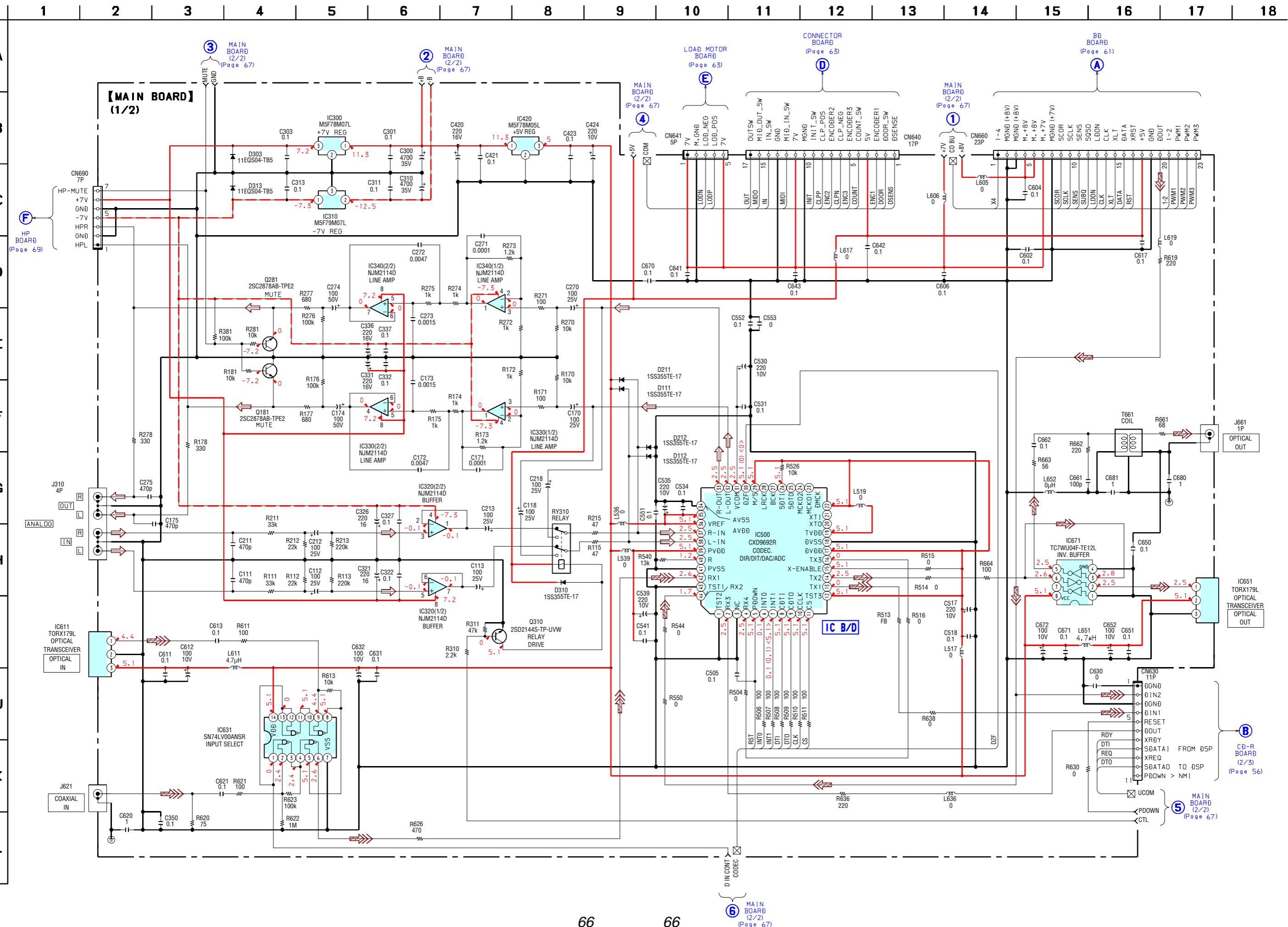
RCD-W222ES

7-13. SCHEMATIC DIAGRAM – MAIN (2/2) SECTION – • See page 73 for IC Pin Function Description.

RCD-W222ES

7-14. PRINTED WIRING BOARD – LED, HP SECTION – • See page 51 for Circuit Boards Location.

	1	2	3	4	5	6	7	8	9	10	11
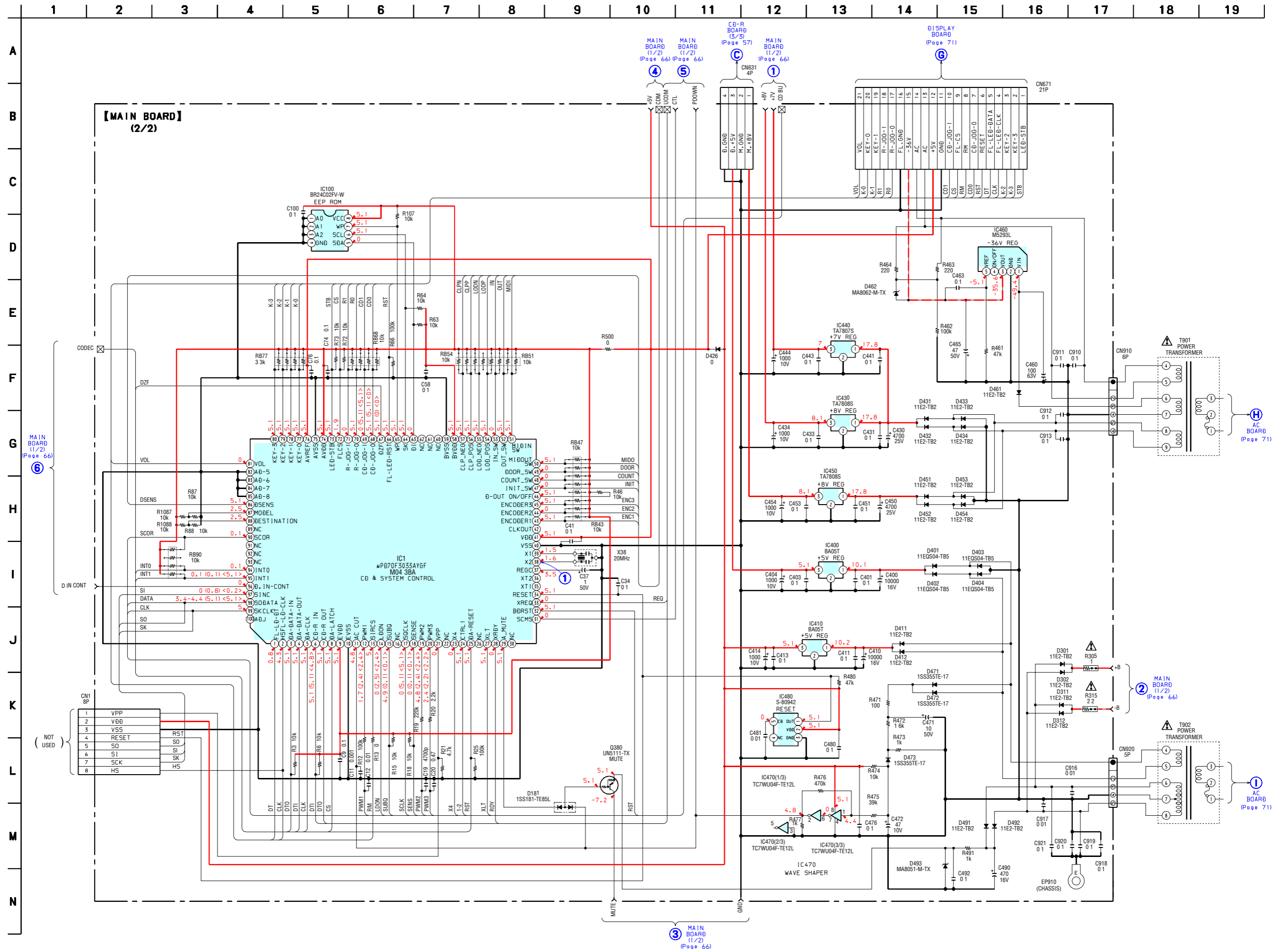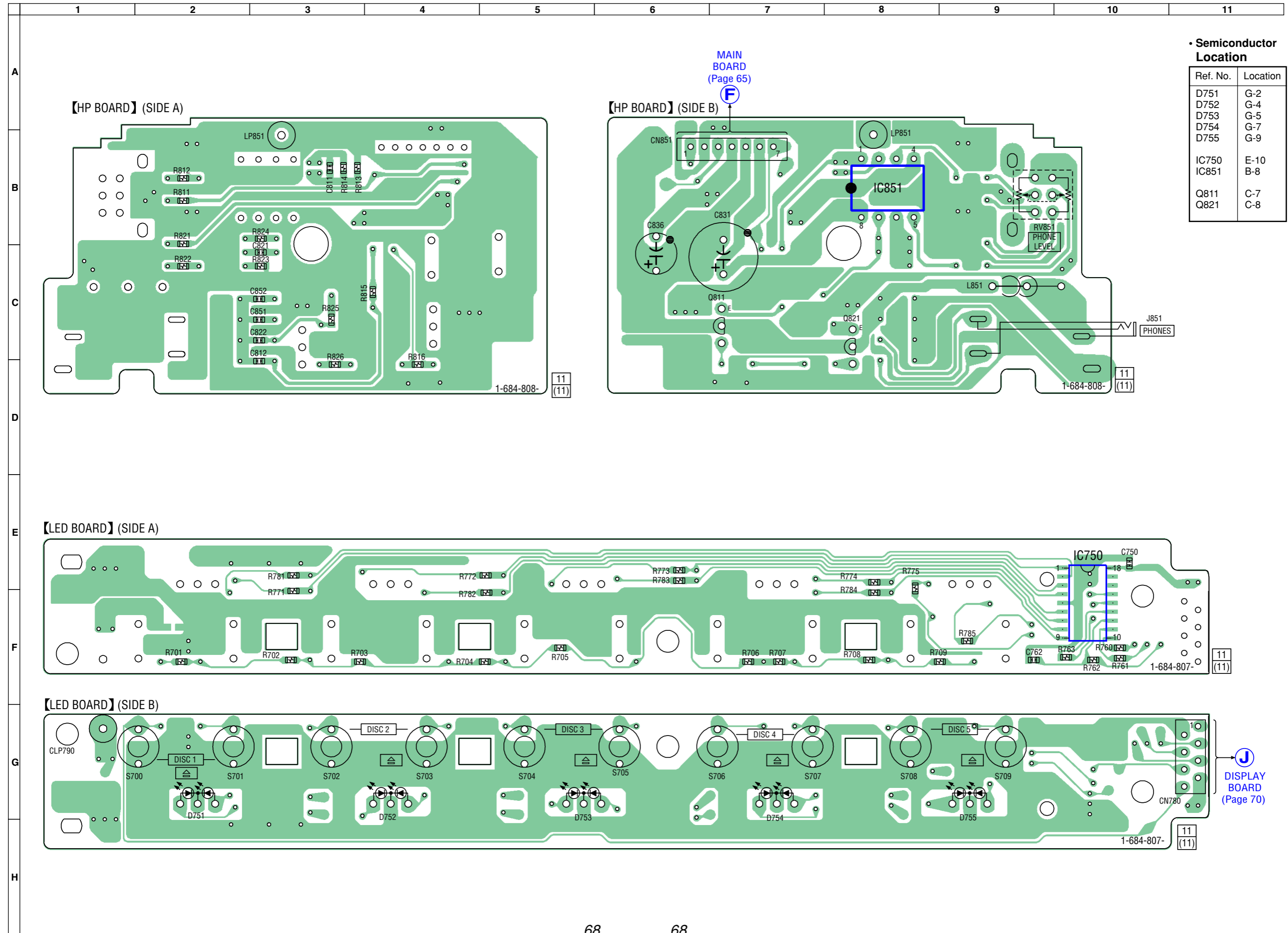
• Semiconductor Location

Ref. No.	Location
D751	G-2
D752	G-4
D753	G-5
D754	G-7
D755	G-9
IC750	E-10
IC851	B-8
Q811	C-7
Q821	C-8

MAIN BOARD (Page 65)

【HP BOARD】(SIDE A)

LP851
R812
R811
C811 R814 R813
R821
R824
C821
R823
R822
C852
C851
R825
R815
C822
C812
R826
R816
1-684-808-

【HP BOARD】(SIDE B)

CN851
C836
C831
IC851
RV851 PHONE LEVEL
Q811
Q821
L851
J851 PHONES
1-684-808-

【LED BOARD】(SIDE A)

IC750 C750
R781
R771
R772
R782
R773
R783
R774
R784
R775
R785
R701
R702
R703
R704
R705
R706 R707
R708
R709
C762
R763
R762
R760
R761
1-684-807-

【LED BOARD】(SIDE B)

CLP790
DISC 1
S700 S701
DISC 2
S702 S703
DISC 3
S704 S705
DISC 4
S706 S707
DISC 5
S708 S709
D751
D752
D753
D754
D755
CN780
DISPLAY BOARD (Page 70)
1-684-807-

【LED BOARD】

CN780
8P

KEY-3	1	
+5V	2	
RESET	3	
LED-DATA	4	
LED-CLK	5	
LED-STB	6	
GND	7	
	8	

R701 220 R702 330 R703 470 R704 680 R705 1k R706 1.5k R707 2.2k R708 4.7k R709 10k

S700 S701 S702 S703 S704 S705 S706 S707 S708 S709

DISC 1   DISC 2   DISC 3   DISC 4   DISC 5

R763 100
R760 100
R761 100
R762 100

C762 470p

J DISPLAY BOARD (Page 71)

IC750
NJU3713G
LED DRIVE

C750 0.1

R771 220 R781 220   D751 SML78423C TP15
R772 220 R782 220   D752 SML78423C TP15
R773 220 R783 220   D753 SML78423C TP15
R774 220 R784 220   D754 SML78423C TP15
R775 220 R785 220   D755 SML78423C TP15

GREEN AMBER   GREEN AMBER   GREEN AMBER   GREEN AMBER   GREEN AMBER

DISC1   DISC2   DISC3   DISC4   DISC5

【HP BOARD】

R825 120
C821 22p   R824 18k   R823 4.7k

Q821
2SC2878AB TPE2
MUTE

R826 4.7k

R822 1k

IC851
NJM4556AD D
HEADPHONE
AMP

C831 1000 16V

C836 100 25V

RV851 20k/20k   R821 22k

PHONE LEVEL

J851
PHONES

L851 1.1μH

R816 4.7k

R815 120

C852 0.1   C851 0.1   C822 0.001   C812 0.001

Q811
2SC2878AB TPE2
MUTE

C811 22p

R814 18k   R813 4.7k

R812 1k

R811 22k

CN851
7P

HP-MUTE	7	
+7V	6	
GND	5	
-7V	4	
HPR	3	
GND	2	
HPL	1	

F MAIN BOARD (1/2) (Page 66)

69   69

RCD-W222ES

7-16. PRINTED WIRING BOARD – DISPLAY, POWER SECTION – • See page 51 for Circuit Boards Location.

【AC BOARD】

【POWER SW BOARD】

【RM BOARD】

【CD SW BOARD】

【DISPLAY BOARD】

1-684-812-

1-684-811-

1-684-813-

1-684-810-

1-684-809-

AC IN

CD SYNCHRO

(DECK B)

(DECK A)
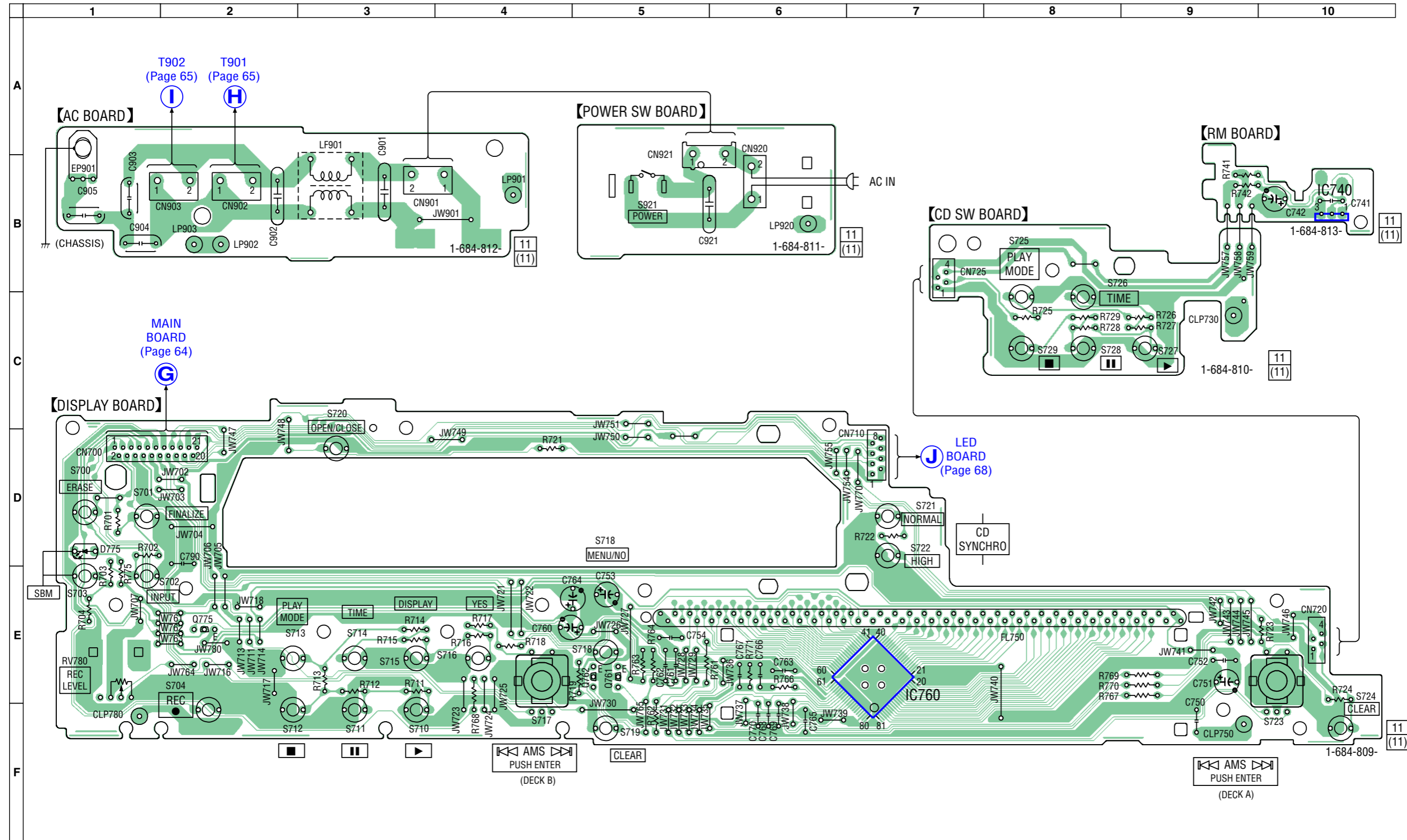
• **Semiconductor Location**

Ref. No.	Location
D775	D-1
IC740	B-10
IC760	E-7
Q761	E-5
Q762	E-5
Q775	E-2

70   70

7-17. SCHEMATIC DIAGRAM – DISPLAY, POWER SECTION –
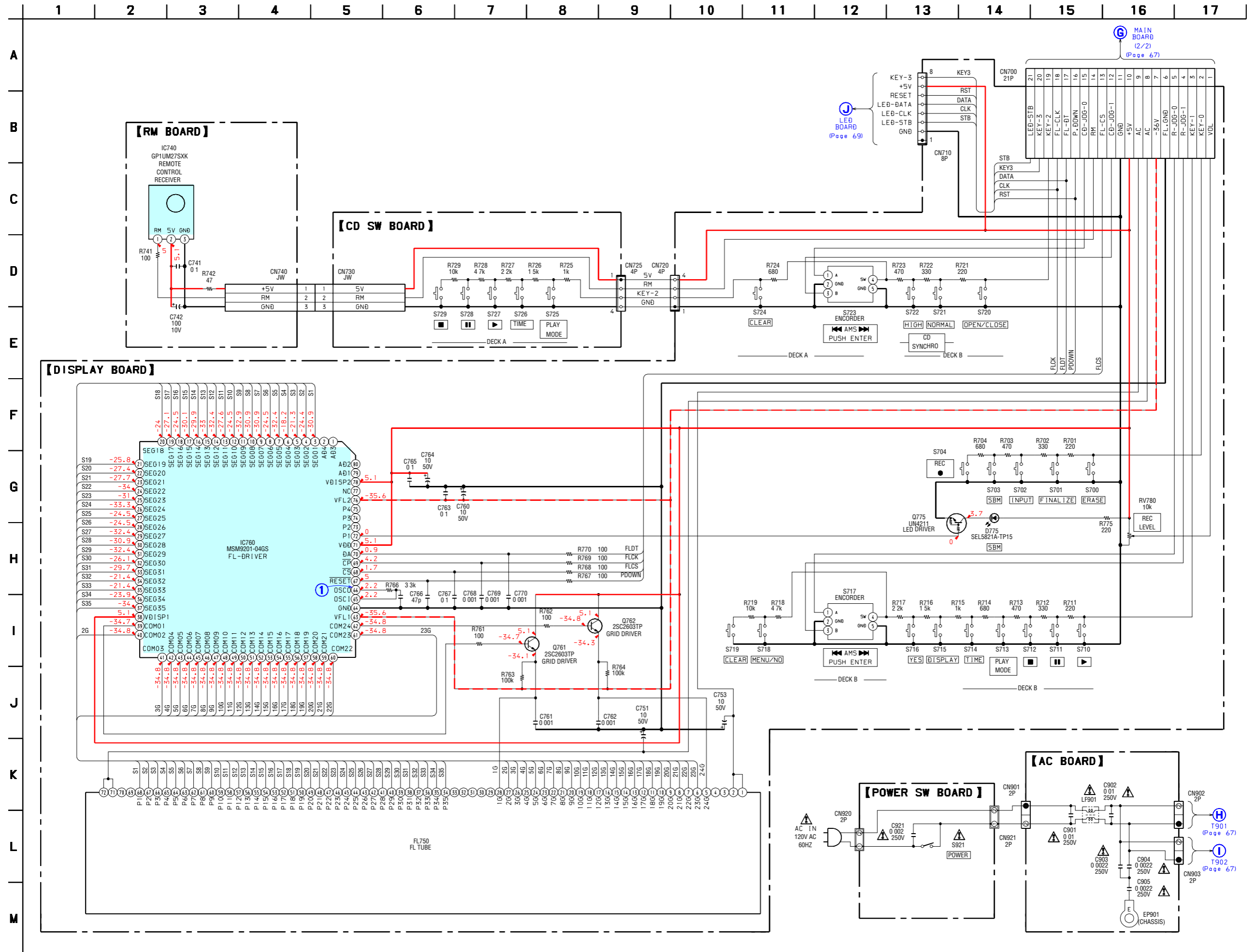
7-18. IC PIN FUNCTION DESCRINTION

• **IC101 CXD3068Q (DIGITAL SERVO, DIGITAL SIGNAL PROCESSOR) (BD Board)**

Pin No.	Pin Name	I/O	Description
1	DVDD0	—	Power supply (+3.3V)
2	XRST	I	System reset signal input
3	MUTE	I	Muting selection input (Connected to ground)
4	DATA	I	Serial data input from μPD703033AYGF
5	XLAT	I	Latch signal input from μPD703033AYGF
6	CLOK	I	Serial data transfer clock input from μPD703033AYGF
7	SENS	O	SENS signal output
8	SCLK	I	SENS serial data read-out clock input
9	ATSK	I	Anti-shock input (Connected to ground)
10	WFCK	O	WFCK (Write Frame Clock) output (Not used)
11	XUGF	O	XUGF output (Not used)
12	XPCK	O	XPCK output (Not used)
13	GFS	O	GFS output (Not used)
14	C2P0	O	C2PO output (Not used)
15	SCOR	O	Sub-code sync signal output
16	CM4	O	4.2336MHz output (Not used)
17	WDCK	O	D/A interface word clock output (Not used)
18	DVSS	—	Ground
19	COUT	O	Numbers of track counted signal output (Not used)
20	MIRR	O	Mirror signal output (Not used)
21	DFCT	O	Defect signal output (Not used)
22	FOK	O	Focus OK signal output (Not used)
23	PWM1	I	Not used (Connected to ground)
24	LOCK	I/O	Not used
25	MDP	O	Spindle motor control signal output
26	SSTP	I	Detect disc inner most trak signal input
27	FST0	O	Not used
28	DVDD1	—	Power supply (+3.3V)
29	SFDR	O	Sled motor control signal output
30	SRDR	O	
31	TFDR	O	Tracking coil drive signal output
32	TRDR	O	
33	FFDR	O	Focus coil drive signal output
34	FRDR	O	
35	DVSS1	—	Ground
36	TEST	I	Not used (Connected to ground)
37	TES1	I	
38	VC	I	Center voltage input
39	FE	I	Focus error signal input
40	SE	I	Sled error signal input

Pin No.	Pin Name	I/O	Description
41	TE	I	Tracking error signal input
42	CE	I	Center servo analog input
43	RFDC	I	RF signal input
44	ADI0	O	Not used (Open)
45	AVSS0	—	Ground
46	IGEN	I	OP AMP constant current input
47	AVDD	—	Power supply (+3.3V)
48	ASYO	O	EFM full swing output
49	ASYI	I	Asymmetry comparate voltage input
50	RFAC	I	EFM signal input
51	AVSS1	—	Ground
52	CLTV	I	Control voltage input for μPD703033AYGF
53	FILO	O	Filter output for master PLL
54	FILI	I	Filter input for master PLL
55	PCO	O	Charge-pump output for master PLL
56	AVDD1	—	Power supply (+3.3V)
57	BIAS	I	Asymmetry circuit constant current input
58	VCTL	I	Control voltage input for variable pitch PLL
59	V16M	O	16.9344MHz clock output (Not used)
60	VPCO	O	Charge-pump output for variable pitch PLL
61	DVDD2	—	Power supply (+3.3V)
62	ASYE	I	Asymmetry circuit ON/OFF input (Connected to VDD)
63	MD2	I	Digital-out ON/OFF control input (Connected to VDD)
64	DOUT	O	Digital-out output
65	LRCK	O	D/A interface, LR clock output (Not used)
66	PCMD	O	D/A interface, Serial deta output (Not used)
67	BCLK	O	D/A interface, bit clock output (Not used)
68	EMPH	O	Not used (Open)
69	XTSL	I	X'tal selection signal input
70	DVSS2	—	Ground
71	XTAI	I	X'tal oscillator input
72	XTAO	O	X'tal oscillator output
73	SOUT	O	Not used (Open)
74	SOCK	O	
75	XOCT	O	
76	SQSO	O	Sub-Q serial data output
77	SQCK	I	SQSO read-out clock input
78	SCSY	I	Sub-code input (Connected to ground)
79	SBSO	O	Sub-P through Sub-W serial output (Not used)
80	EXCR	I	SBSO read-out Clock input (Not used)

· **IC1 μPD70F3033AYGF-M04-3BA (SYSTEM CONTROL) (MAIN BOARD)**

Pin No.	Pin Name	I/O	Description
1	FL-LD-DT	O	FL/LED driver data output
2	[HS] FL-LD-CLK	O	FL/LED driver data clock output
3	DA-DATA-IN	I	Serial data input from CXD9692R
4	DA-DATA-OUT	O	Serial data output to CXD9692R
5	DA-CLK	O	Clock output to CXD9692R
6	CD-R IN	I	CD-R control data input from HD64F3064BFBL25
7	CD-R OUT	O	CD-R control data output to HD64F3064BFBL25
8	DA-LATCH	O	Data latch signal output to CXD9692R
9	EVDD	—	Power supply (+5V)
10	EVSS	—	Ground
11	AC CUT	I	AC cut signal input
12	PWM1	O	PWM signal output for FE (focus error)
13	SIRCS	I	SIRCS signal input
14	LDON	O	Laser ON signal output
15	SUBQ	I	Sub-Q serial data input
16	NC	O	Not used (open)
17	SQCLK	O	Sub code Q clock output
18	SENSE	I	SENSE signal input from CXD3068Q
19	PWM2	O	PWM signal output for TE (tracking error)
20	PWM3	O	PWM signal output for RFDC
21	VPP	I	VPP input at flash program
22	NC	O	Not used (open)
23	X4	O	Four times set signal output for disc speed
24	CTRL1	O	Four times set signal output for disc speed
25	DA-RESET	O	Reset signal output to CXD9692R
26	NC	—	Not used (open)
27	XLT	O	Serial data latch signal output to CXD30689Q
28	XRDY	I	RDY signal input from HD64F3064BFBL25
29	A_MUTE	O	Line out mute signal output
30	NC	—	Not used (open)
31	SCMS	O	Line in select signal output
32	BDRST	O	Reset signal output to CXD3068Q
33	XREQ	O	Data REQ signal output HD64F3064BFBL25
34	RESET	I	System reset signal input
35	XT1	I	Not used (open)
36	XT2	O	Not used (open)
37	REGC	—	Connected to ground with capacitor of regulator
38	X2	O	Crystal oscillator output (20MHz)
39	X1	I	Crystal oscillator input (20MHz)
40	VSS	—	Ground
41	VDD	—	Power supply (+5V)
42	CLKOUT	O	Not used (open)
43	ENCODER1	I	Encoder address signal input from disc tray
44	ENCODER2	I	Encoder address signal input from disc tray
45	ENCODER3	I	Encoder address signal input from disc tray
46	D-OUT ON/OFF	I	Not used (pull up)
47	INIT_SW	I	INIT detect signal input
48	COUNT_SW	I	COUNT detect signal input
49	DOOR_SW	I	Tray lid open detect signal input

Pin No.	Pin Name	I/O	Description
50	MIDOUT_SW	I	MIDOUT detect signal input
51	MIDIN SW	I	MIDIN detect signal input
52	OUT_SW	I	Tray out detect signal input
53	IN SW	I	Tray in detect signal input
54	LOD_POS	O	Loading motor control signal output
55	LOD_NEG	O	Loading motor control signal output
56	CLP_POS	O	Elevator up/down control signal output
57	CLP_NEG	O	Elevator up/down control signal output
58	BVDD	—	Power supply (+5V)
59	BVSS	—	Ground
60 to 62	NC	—	Not used (open)
63	DI	I/O	Data input/output for BR24C02FV-M
64	SK	O	Clock output for BR24C02FV-M
65	WP	O	Write protect signal output for BR24C02FV-M
66	FL-LED-RST	O	FL/LED driver reset signal output
67	DZC	I	Zero data detect input from CXD9692R
68	CD-JOG-0	I	CD-JOG encoder signal input
69	CD-JOG-1	I	CD-JOG encoder signal input
70	R-JOG-0	I	CD-R-JOG encoder signal input
71	R-JOG-1	I	CD-R-JOG encoder signal input
72	FLCS	O	FL driver chip select signal output
73	LED-STB	O	LED driver strobe signal output
74	AVDD	—	Power supply (+5V)
75	AVSS	—	Ground
76	AVREF	I	ADC reference voltage input
77	KEY-0	I	Key data input (A/D input)
78	KEY-1	I	Key data input (A/D input)
79	KEY-2	I	Key data input (A/D input)
80	KEY-3	I	Key data input (A/D input)
81	VOL	I	Analog recording volume level input (A/D input)
82 to 85	AD-5 to AD-8	I	Not used (connected to ground)
86	DSENS	I	Disc in detect signal input
87	MODE	I	MODE input
88	DESTINATION	I	DESTINATION input
89	NC	—	Not used (open)
90	SCOR	I	Sub code sync detect input from CXD3068Q
91 to 93	NC	—	Not used (open)
94	INT0	I	INT signal input from CXD9692R
95	INT1	I	INTO signal input from CXD9692R
96	D.IN-CONT	O	Digital input select signal output
97	SI NC	I	Serial data input
98	SO DATA	O	Serial data output
99	SK CLK	O	Serial clock output
100	ADJ	I	ADJ mode select terminal

• **IC201 LC89587-UK1-E CD DECODER/ENCODER,ATIP-DEMODULATER,TTIP-DECODE/CLV-SERVO,WRITE STRATAGE,DIGITAL AUDIO I/F (CD-R BOARD)**

Pin No.	Pin Name	I/O	Description
1	DVSS	—	Ground
2 to 7	RA4 to RA9	O	Address output for RAM
8	DVDD (DRAMVDD)	—	Power supply (+3.3V)
9	DVSS	—	Ground
10 to 15	IO0 to IO5	I/O	Data input/output for RAM
16	DVDD (3.3V)	—	Power supply (+3.3V)
17	DVSS	—	Ground
18 to 21	IO6 to IO9	I/O	Data input/output for RAM
22	DVDD (DRAMVDD)	—	Power supply (+3.3V)
23	CVSS	—	Ground
24 to 29	IO10 to IO15	I/O	Data input/output for RAM
30	MON1 (FEMG)	O	LD write signal output
31	MON2 (ATIPCRC/PCK/DATA)	O	Not used (open)
32	MON3 (CDETR/CK2)	O	Not used (open)
33	MON4 (EMP/LRCK)	O	Not used (open)
34	DVDD	—	Power supply (+5V)
35	DVSS	—	Ground
36	TEST0 (ENCERR)	I	Not used (pull up)
37	TEST1	I	Not used (pull up)
38	TEST2 (RESERVED)	I	Not used (pull up)
39	WRITE	I	Write strategy control signal input
40	SSP2	O	Servo sampling pulse output to AK8567
41	SSP1	O	Servo sampling pulse output to AK8567
42	RAPC/C2F	O	LD sampling pulse output to AK8567
43	WAPC	O	LD sampling pulse output to AK8567
44	H11T0/FSEQ	O	OPC sampling pulse output to AK8567
45	LDH/WRQ	O	Not used (open)
46	ATEST3	O	LD write control signal output
47	ATEST1 (WRITEEFM)	O	Not used (open)
48	WDAT	O	LD write control signal output
49	NWDAT	O	LD write control signal output
50	DVDD	—	Power supply (+5V)
51	DVSS	—	Ground
52	AVDD	—	Power supply (+3.3V)
53	AVSS	—	Ground
54	R1	I	Not used (pull up)
55	VCNT1	I	Write strategy signal input
56	DCN1	I	Not used (open)
57	PD1	O	Write strategy signal output
58	ZINT	O	Interrupt signal output to HD64F3064BFBL25
59 to66	D0 to D7	I/O	System data to HD64F3064BFBL25
67	SRSTNBY	I	Not used (connected to AVDD)
68	AVDD (3.3VSRAM)	—	Power supply (+3.3V)
69	AVSS	—	Ground
70 to 77	SUA0 to SUA7	I	Address input from HD64F3064BFBL25
78	ZRD	I	Read signal input from HD64F3064BFBL25
79	ZCS	I	Chip select signal input from HD64F3064BFBL25
80	ZWR	I	Write signal input from HD64F3064BFBL25
81	ZRESET	I	Reset signal input from HD64F3064BFBL25

Pin No.	Pin Name	I/O	Description
82	DVDD (5VD)	—	Power supply (+5V)
83	DVSS	—	Ground
84	DVDD (3.3VD)	—	Power supply (+3.3V)
85	DVSS	—	Ground
86	AVDD (3.3VA)	—	Power supply (+3.3V)
87	AVSS	—	Ground
88	SLCIST1	I	EFM slice level set input
89	SLCIST2	I	EFM slice level set input
90	SLCO0	O	EFM slice level output
91	SLCO1	O	Not used (open)
92	SLCO2	O	Not used (open)
93	SLCO3	O	Not used (open)
94	EFMIN	I	EFM signal input to AK8567
95	EFMIN2	I	Not used (open)
96	DSLB	O	Not used (open)
97	JITIN	I	Jitter signal input
98	JITC	O	Jitter signal output
99	RPO	O	P/N balance adj.terminal
100	OPP	I	P/N balance adj.terminal
101	PCKISTF	I	Charge pump set input
102	PCKISTP	I	Charge pump set input
103	PD0	O	Charge pump filter output
104	AVDD (3.3VA)	—	Power supply (+3.3V)
105	AVSS	—	Ground
106	PDS1	O	Not used (open)
107	PDS2	O	Not used (open)
108	PDS3	O	Not used (open)
109	FR	I	VCO frequency set input
110	AD0	I	ADC input (not used)
111	RREC	I	FOK signal input from AK8567
112	FE	I	FE signal input from AK8567
113	TE	I	TE signal input from AK8567
114	VREF	I	ADC reference voltage input (+2.5V)
115	AD1	I	ADC input (not used)
116	AVDD (SERVO 5V)	—	Power supply (+5V)
117	AVSS	—	Ground
118,119	DA0,DA1	O	Not used (open)
120	DVDD (DIGITAL 3.3V)	—	Power supply (+3.3V)
121	DVSS	—	Ground
122	DA2	O	DA output
123	TDO	O	Tracking servo signal output
124	FDO	O	Focus servo signal output
125	SLDO	O	Sled servo signal output
126	SPDO	O	Spindle servo signal output
127	SUBSYNC	O	Sub code SYNC output to HD64F3064BFBL25
128	ZRFDET	I	Not used (connected to VDD)
129	DEFECT/FSX/SHOCK	O	Not used (open)
130	LOCK	O	Not used (open)
131	DEF	I	Defect detect signal input form AK8567
132	HFL (MIRR)	I	Mirror detect signal input from AK8567

Pin No.	Pin Name	I/O	Description
133	TES	I	TES comparator signal input from AK8567
134	EFMO (RFNG/EFLG/EFMO)	O	Not used (open)
135	LDON	O	LD control signal output
136	FG	I	SPFG signal input from LB11698H
137	PCK2 (34MHz)	O	PICK clock output to AK8567
138	DODD (5VD)	—	Power supply (+5V)
139	DOSS	—	Ground
140	ATIPSYNC	O	ATIP sync signal output to LB11698H
141	BIDATA	I/O	Not used (pull down)
142	BICLK	I/O	Not used (pull down)
143	WOBBLE	I	ATFG signal input to AK8567
144	JITTER	O	Not used (open)
145	JITPCO	O	PLL PH output
146	JITLPF1	I	PLL LPF input
147	JITLPF0	O	PLL LPF output
148	JITVCON	I	PLL VCO clock input
149	AVSS	—	Ground
150	AVDD (CJS 3.3V)	—	Power supply (+3.3V)
151	DIRRS	I	VCO gain control input
152	DIRVCO	I	VCO OSC control input
153	DIRLPF	O	Loop filter set output
154	AVDD	—	Power supply (+3.3V)
155	AVSS	—	Ground
156	DVDD (5VD)	—	Power supply (+5V)
157	DVSS	—	Ground
158	DIRERR	O	Not used (open)
159	DIN1	I	Digital data input
160	DIN2	I	Digital data input
161	DIN3	I	Not used (connected ground)
162	DIN4	I	Not used (connected ground)
163	DACCKOUT	O	Not used (open)
164	ENCCKOUT	O	Not used (open)
165	CDCKOUT	O	Not used (open)
166	AUXMCKIN	I	Not used (pull down)
167	XTALCK	I	Crystal oscillator input (33.8688MHz)
168	XTAL	O	Crystal oscillator output (33.8688MHz)
169	PDO0	O	Charge pump output
170	VCNTO	I	VCO control input
171	RD	I	VCO bias resister terminal
172	AVDD (CLOCK3.3V)	—	Power supply (+3.3V)
173	AVSS	—	Ground
174	TEST4 (ADCCKOUT)	—	Not used (pull down)
175	ROUT	O	Audio R output (for check)
176	AVDD	—	Power supply (+5V)
177	AVSS	—	Ground
178	LOUT	O	Audio L output (for check)
179	DACDATA	O	Not used (open)
180	DACLRCK	O	Not used (open)
181	DACBCK	O	Not used (open)
182	DVDD (3.3VD)	—	Power supply (+3.3V)

Pin No.	Pin Name	I/O	Description
183	DVSS	—	Ground
184	ADCDATA	I	Not used (pull down)
185	ADCBCK	O	Not used (open)
186	ADCLRCK	O	Not used (open)
187	AUXDATA	I	Not used (pull down)
188	AUXBCK	I	Not used (connected ground)
189	AUXLRCK	I	Not used (connected ground)
190	DVDD (5VD)	—	Power supply (+5V)
191	DVSS	—	Ground
192	ADCSTBY	O	Not used (open)
193	AUXTX	I	Not used (connected ground)
194	DITOUT	O	DIT data outout
195	TEST3 (EXTDACEMP)	I/O	Not used (pull down)
196	SBDATA	I/O	Not used (pull down)
197	CLCK	I/O	Not used (pull down)
198	SFSY	I/O	Not used (pull down)
199	SBSY	I/O	Not used (pull down)
200	ZRAS	O	RAS signal output for RAM
201	ZCAS	O	CAS signal output for RAM
202	ZWE	O	Write signal output for RAM
203	ZOE	O	Out enable signal output for RAM
204 to 207	RA0 to RA3	O	Address output for RAM
208	DVDD (DRAMVDD)	—	Power supply (+3.3V)

· IC501 HD64F3064BFBL25 CD-R REC/PB CONTROL (CD-R BOARD)

Pin No.	Pin Name	I/O	Description
1	VCL	—	Not used (Connected to ground with capacitor)
2	XCSCDR	O	Chip select signal output to LC89587-UK1-E
3 to 5	NU	I	Not used (pull up)
6	XRSTRFP	O	Reset signal output to AK8567
7	XREQI	I	Data REQ signal input from uPD703033AYGF
8	XRDYO	O	RDY signal output to uPD703033AYGF
9	XRSTCDR	O	Reset signal output to LC89587-UK1-E
10	FEW	I	Write enable signal input
11	VSS	—	Ground
12	SDATAO	O	Serial data output to AK8567 and EEPROM
13	SDATAO(HOST)	O	Serial data output to uPD703033AYGF
14	SDATAI(PROM)	I	Serial data input from EEPROM
15	SDATAI(HOST)	I	Serial data input from uPD703033AYGF
16	SCLKO	O	Serial clock output to AK8567 and EEPROM
17	SUB_SYNC	I	Sub sync signal input from LC89587-UK1-E
18	RSBETA	O	Reset signal output to AK8567
19,20	NU	—	Not used (pull up)
21	MIRR/XRC	O	Mirror signal output
22	VSS	—	Ground
23	AGCON	O	AGC enable signal output to AK8567
24	XRW/R	O	CD-RW/CD-R select signal output to AK8567
25	VRDSW	O	Read LD control signal output to AK8567
26	VWDSW	O	Write LD control signal output to AK8567
27 to 34	D8 to D15	I/O	System data input/output to LC89587-UK1-E
35	VCC	—	Power supply (+5V)
36 to 43	A0 to A7	O	Address output to LC89587-UK1-E
44	VSS	—	Ground
45 to 56	A8 to A19	O	Not used (pull up)
57	VSS	—	Ground
58	NU	I	Not used (pull up)
59	CS	O	Chip select signal output to EEPROM
60	XLAT	O	Latch signal output to AK8567
61	ATIPSYNC	I	ATIP sync signal input from LC89587-UK1-E
62	XSTBY	I	Not used (pull up)
63	XREST	I	System reset input
64	XP.DOWN	I	AC cut (power down) signal input
65	VSS	—	Ground
66	EXTAL	I	Crystal oscillator input (20MHz)
67	XTAL	O	Crystal oscillator output (20MHz)
68	VCC	—	Power supply (+5V)
69	XAS	O	Not used (pull up)
70	XRD	O	Data read signal output to LC89587-UK1-E
71	XHWR	O	Data write signal output to LC89587-UK1-E
72	XLWR	O	Not used (pull up)
73	MD0 (H)	I	Mode selector (high) input
74	MD1 (L)	I	Mode selector (low) input
75	MD2	I	Mode selector (high) input
76	AVCC	—	Power supply (+5V)
77	AVREF	I	A/D reference voltage input (+5V)
78	KEY	I	Key scan input
79	BCENT	I	Center signal input from AK8567

RCD-W222ES

Pin No.	Pin Name	I/O	Description
80	PHBETA	I	Beta signal top level input from AK8567
81	BHBETA	I	Beta signal bottom level input from AK8567
82	VREF	I	Reference voltage input (+2.5V) from AK8567
83	MPX	I	Monitor signal multiplex input from AK8567
84	TMP	I	Thermometer signal input
85	VWDC2	O	Write LD control signal output
86	AVSS	—	Ground
87	XINTCDR	I	Interrupt signal input from LC89587-UK1-E
88	RECD	I	CD recoding area detect signal input from AK8567
89	XTAND	I	Tracking off detect signal input from AK8567
90	SPFG	I	SPFG signal input from LB11698H
91	XIN/EXT	I	EXT data detect signal input
92	VSS	—	Ground
93	SLFG	I	SLFG signal input
94	TZC	I	Tracking zero cross detect signal input from AK8567
95	SPFG	I	SPFG signal input from LB11698H
96	XMMUTE	O	Spindle motor control signal output
97	INSW	I	Loading in limit switch signal input
98	OUTSW	I	Loading out limit switch signal input
99	REV	O	Loading motor control sigunal output
100	FWD	O	Loading motor control sigunal output

· **IC101 AK8567 (S/H,RF EQUALIZER,APC,SERVO) (CD-R BOARD)**

Pin No.	Pin Name	I/O	Description
1	AVDD3	—	Power supply (+5V)
2	BCENT	O	Center signal output
3	PHBETA	O	Data signal top level output to HD64F3064BFBL25
4	BHBETA	O	Data signal bottom level output to HD64F3064BFBL25
5	PHBTC	O	Not used (Connected to ground with capacitor)
6	BHBTC	O	Not used (Connected to ground with capacitor)
7	MPP	O	Not used (open)
8	TEIN	I	TE (tracking error) signal input
9	TE	O	TE (tracking error) signal output
10	FE	O	FE (focus error) signal output
11	SBAD	O	Not used (open)
12	TZCLVL	I	Not used (Connected to ground with capacitor)
13	VREF	I	Reference voltage input (+2.5V)
14	AGND1	O	Not used (Connected to ground with capacitor)
15	BIAS	O	Bias setting terminal (Connected to ground with resister)
16	VSS	—	Ground
17	FVREF	I	APC reference voltage input (+2.5V)
18	FPDO	I	LD monitor voltage input
19	RREF	I/O	Not used (Connected to ground with capacitor)
20	VRDC	O	Read LD control signal output
21	VRDCN	I	Read LD control AMP (-) input
22	VRDCN2	I	Read LD control time constant setting input
23	WREF	I/O	Not used (Connected to ground with capacitor)
24	WDAO	O	Not used (open)
25	AVDD2	—	Power supply (+5V)
26	AVSS2	—	Ground
27	VWDC	O	Write LD control signal output
28	VWDCN2	I	Write LD control time constant setting input
29	VWDCN	I	Write LD control AMP (-) input
30	ATFM	O	Not used (open)
31	AGC1C	O	AGC time constant setting terminal
32	AGC2C	O	AGC time constant setting terminal
33	AGC3C	O	AGC time constant setting terminal
34	AGND2	O	AGC time constant setting terminal
35	VSS	—	Ground
36	SGAINDN	I	Gain setting input
37	GAINUP	I	CD-RW select signal input
38	AGCON	I	Wobble AGC enable signal input
39	ATFG	O	ATIP FG signal output
40	XTOR	O	Not used (open)
41	XTAND	O	Tracking off detect signal output
42	TZC	O	Tracking zero cross detect signal output
43	RECD2	O	CD recoding area detect signal output
44	RECD1	O	Not used (open)
45	RC	O	RC signal output
46	DFCT	O	DFCT signal output
47	MIRR	O	MIRR signal output
48	MCLK1	I	Main clock input from LC89587-UK1-E
49	MCLK2	I	Not used (Connected to ground)
50	DVSS	—	Ground
51	DVDD	—	Power supply (+5V)

RCD-W222ES

Pin No.	Pin Name	I/O	Description
52	FOK	O	FOK signal output
53	RZC	O	Not used (open)
54	MPDSH	I	Servo sampling pulse input from LC89587-UK1-E
55	SPDSH	I	Servo sampling pulse input from LC89587-UK1-E
56	RFPDSH	I	Read APC sampling pulse signal input from LC89587-UK1-E
57	WFPDSH	I	Write APC sampling pulse signal input from LC89587-UK1-E
58	WLDON	I	Write LD control signal input from LC89587-UK1-E
59	RLDON	I	Read LD control signal input from LC89587-UK1-E
60	SPBLVL	I	BLEVEL sampling pulse input from LC89587-UK1-E
61	SPRFTR	I	WRFTR sampling pulse signal input from LC89587-UK1-E
62	VWDSW	I	Write LD control time constant setting input from HD64F3064BFBL25
63	VRDSW	I	Read LD control time constant setting input from HD64F3064BFBL25
64	RSBETA	I	Beta circuit reset signal input from HD64F3064BFBL25
65	SCLK	I	Register clock input from HD64F3064BFBL25
66	SDATA	I	Register data input from HD64F3064BFBL25
67	XLAT	I	Register latch signal input from HD64F3064BFBL25
68	XRST	I	Register reset signal input from HD64F3064BFBL25
69	VSS	—	Ground
70	OSTCC	O	Not used (Connected to ground with capacitor)
71	AGCC	O	RFAGC time constant setting terminal
72	PHD2C	O	Not used (Connected to ground with capacitor)
73	RCCMPI	I	RC detect comparator signal input
74	PBH0	O	Not used (open)
75	AVDD1	—	Power supply (+5V)
76	AVSS1	—	Ground
77	RRFTOP	O	Not used (open)
78	RRFBTM	O	Not used (open)
79	N.C.	—	Not used (open)
80	EQRF	O	EFM signal output to LC89587-UK1-E
81	N.C.	—	Not used (open)
82	AUX1	I	Not used (Connected to ground with capacitor)
83	AUX2	I	Monitor signal input
84	AUX3	I	Monitor signal input
85	MPXOUT	O	Monitor signal multiplex output to HD64F3064BFBL25
86	RRFVC(1V)	I	RRF level shift voltage input
87	RECDIN	I	Write RF signal input
88	RRF	O	Read RF signal output
89	WRF	O	Not used (open)
90	VSS	—	Ground
91	AIN	I	Optical pickup RF data (A) input
92	BIN	I	Optical pickup RF data (B) input
93	CIN	I	Optical pickup RF data (C) input
94	DIN	I	Optical pickup RF data (D) input
95	EIN	I	Optical pickup RF data (E) input
96	FIN	I	Optical pickup RF data (F) input
97	GIN	I	Optical pickup RF data (G) input
98	HIN	I	Optical pickup RF data (H) input
99	HAVC	I	Optical pickup RF data (I) input
100	AVSS3	—	Ground

7-19. IC BLOCK DIAGRAMS

IC500   CXD9692R (MAIN BOARD)
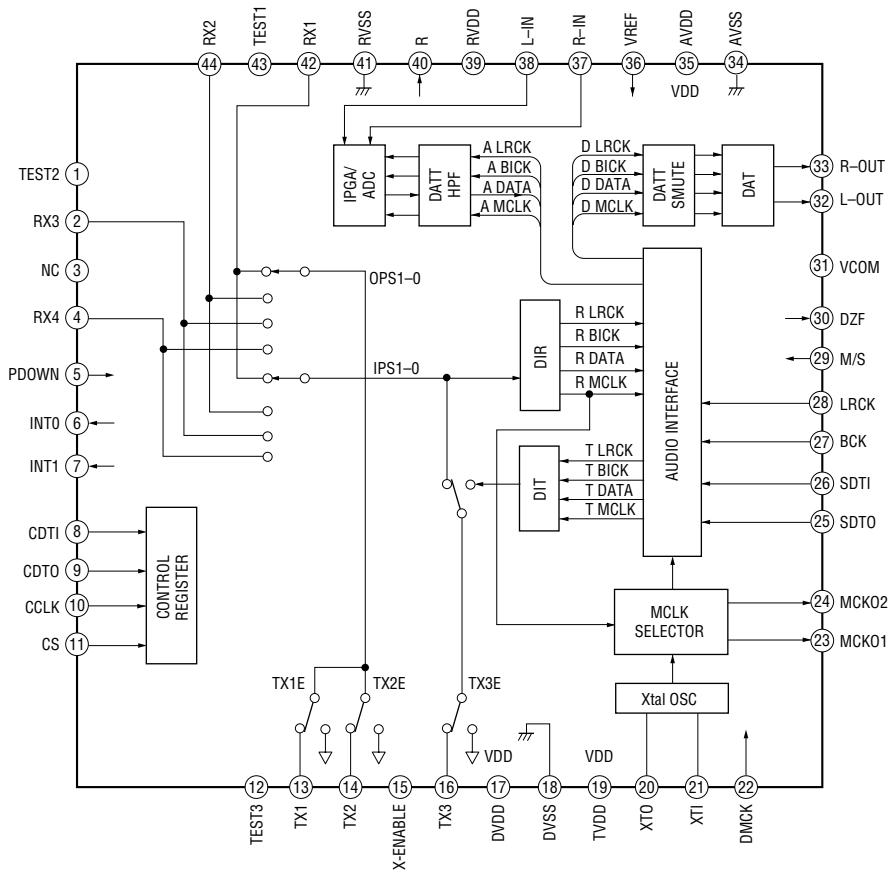
IC103   CXA2581N-T4 (BD BOARD)

RCD-W222ES

IC102   AN41050 (BD BOARD)

Pin labels (left side, top to bottom):
VO3+ (1), VO3- (2), PGND2 (3), PGND2 (4), VO4+ (5), NC (6), NC (7), STBY (8), NC (9), VO4- (10), NC (11), PVCC2 (12), PVCC2 (13), NC (BC4) (14), NC (15), NC (BC3) (16), NC (VPCMP2) (17), NC (CT) (18), NC (SW) (19), NC (FB) (20), NC (21), VREF (22), IN4 (23), IN4R (24), OPO3 (NC) (25), IN3 (26), IN3+ (27), SVCC (28) VCC

Pin labels (right side, top to bottom):
VO2- (56), VO2+ (55), PGND1 (54), PGND1 (53), VO1- (52), NC (51), NC (50), PVCC/2(NC) (49), NC (48), VO1+ (47), NC (46), PVCC1 (45), PVCC1 (44), NC (BC2) (43), NC (42), NC (BC1) (41), NC (VPCMP1) (40), NC (VDD) (39), OP+ (38), OP- (37), OP.O (36), IN1+ (35), IN1- (34), OPO1 (NC) (33), IN2+ (32), IN2- (31), OPO2 (NC) (30), SGND (29)

Internal blocks: H BRIDGE, PRE DRIVER, VCC1, VP1, VCC2, VP2, STADBY, V/H, CHARGE PUMP, CHOPPING OSC, ABS, REG, VREF

IC701   M54641L (CLAMP MOTOR BOARD)
IC702   M54641L (LOADING MOTOR BOARD)

Internal blocks: REG, INPUT AMP, CONTROL, POWER AMP

Pin labels (bottom): VCC (1), OUT2 (2), IN1 (3), GND (4), VREF (5), IN2 (6), OUT1 (7), VCC (8)
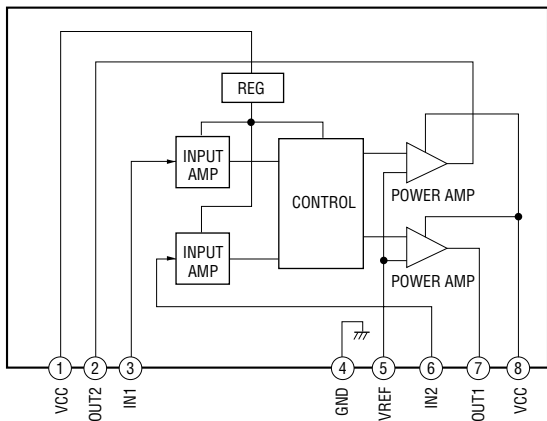
IC171   BA5937AFP-E2 (CD-R BOARD)

Pin labels (top): SGND (28), OUT4- (27), OUT4+ (26), IN1-1 (25), IN1-2 (24), VREFIN (23), VCC1 (22), VCC3 (21), IN3 (20), LDIN (19), OUT3+ (18), OUT3- (17), FWD (16), REV (15)

Internal blocks: LEVEL SHIFT, VCC1 (CH1,4), VCC1 (CH3), FWD REV LOGIC, VOLTAGE CTRL, MUTE CH1,4, VCC (CH2)

Pin labels (bottom): OUT1- (1), OUT1+ (2), IN1-1 (3), IN1-2 (4), NC (5), NC (6), MUTE (7), GND (8), NC (9), VCC2 (10), NC (11), OUT2+ (12), OUT2- (13), SGND (14)
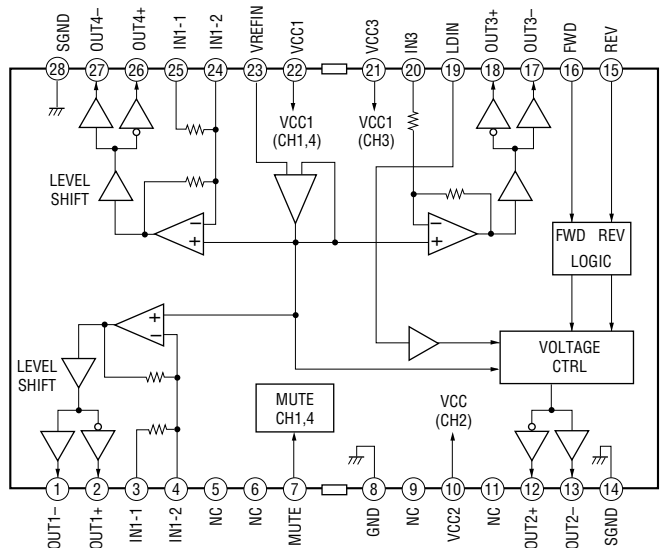
NOTE:
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Color indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE) ••• (RED)
  ↑ Parts color   ↑ Cabinet's color

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

8-1. CASE SECTION
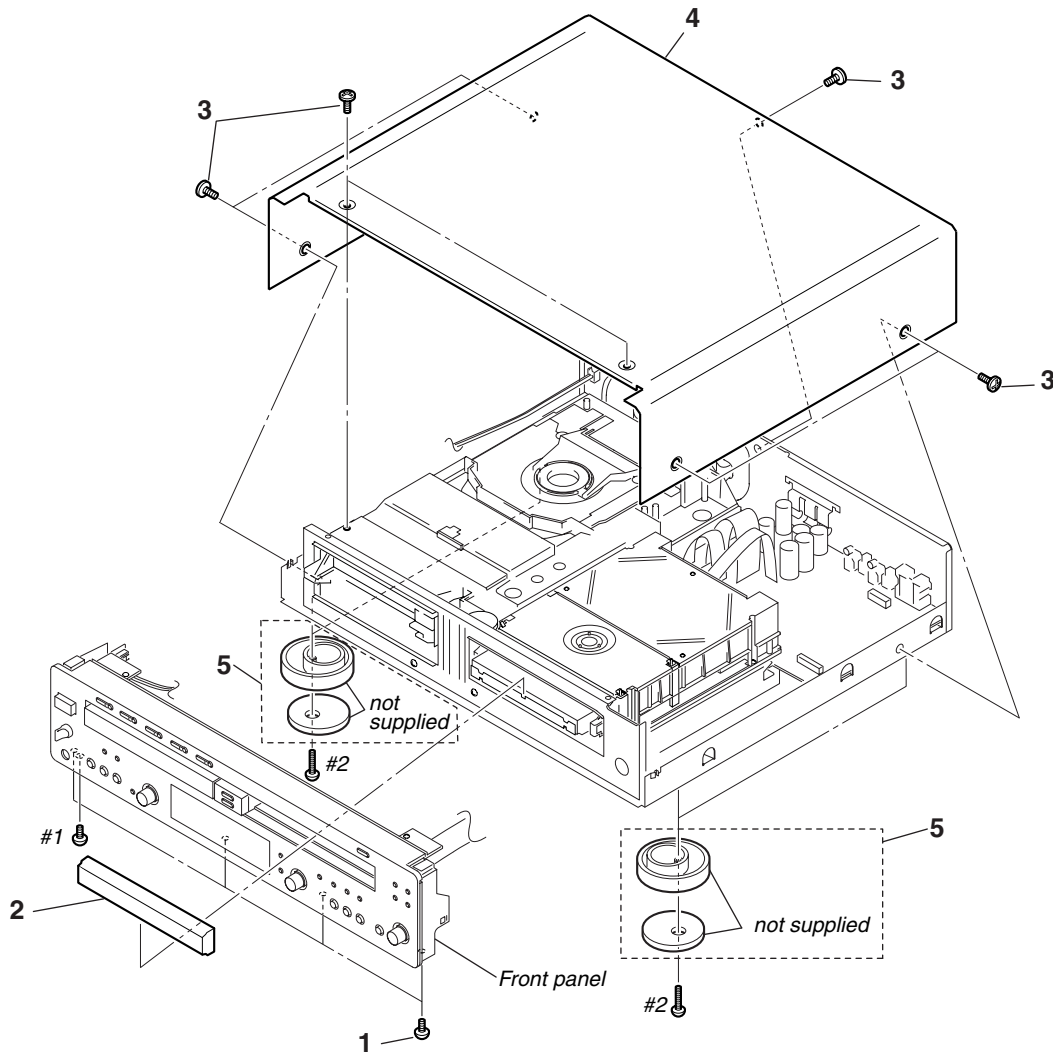
Ref. No.	Part No.	Description	Remarks
1	3-704-515-21	SCREW (BV/RING)	
2	4-240-483-01	PANEL, LOADING	
3	4-227-843-01	SCREW (TP), FLAT HEAD	
4	4-240-475-11	CASE	
5	X-4953-883-2	FOOT ASSY (F50180S)	

Ref. No.	Part No.	Description	Remarks
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#2	7-685-885-01	SCREW +BVTT 4X6(S)	

RCD-W222ES

8-2. FRONT PANEL SECTION
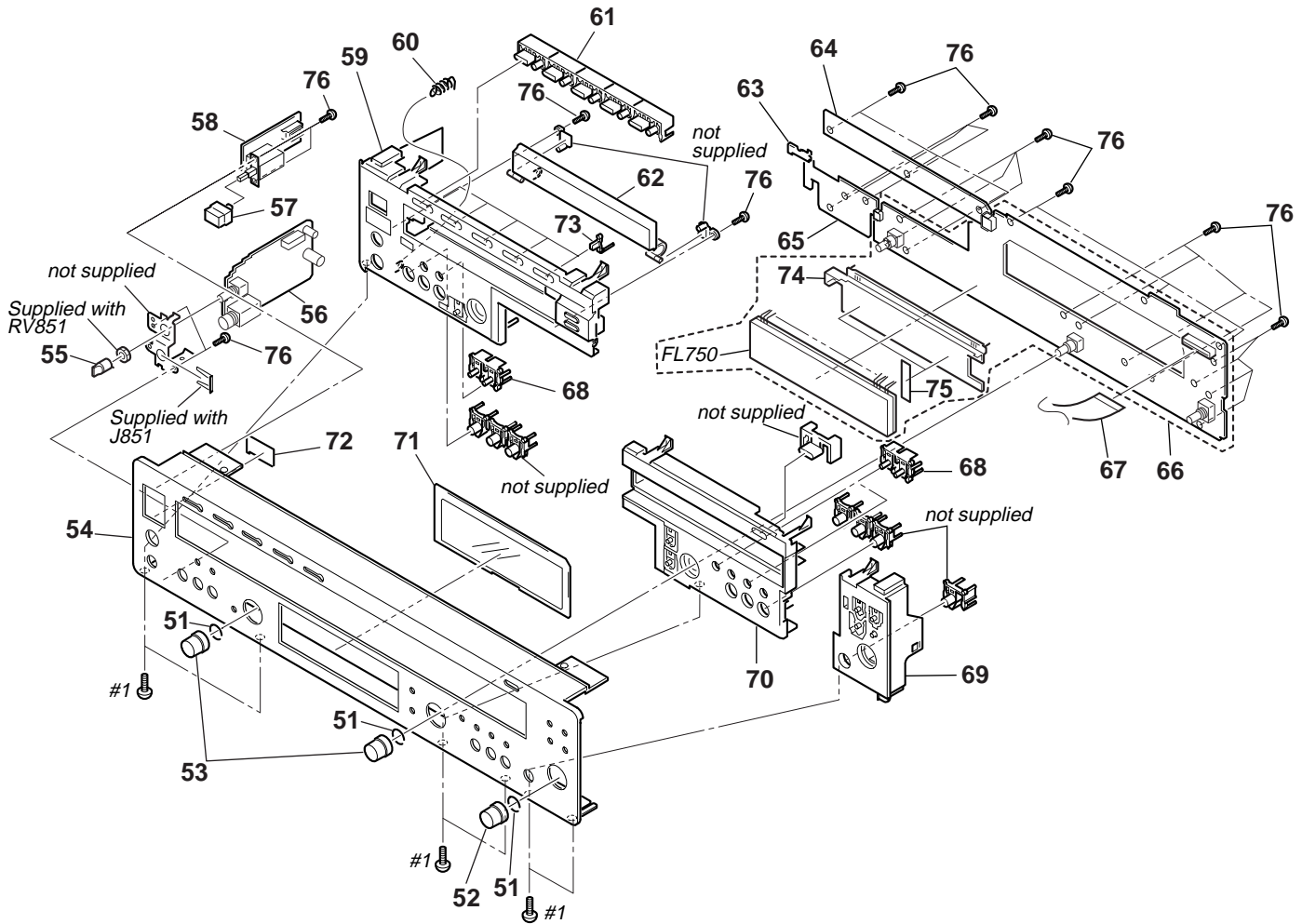
Ref. No.	Part No.	Description	Remarks
51	3-354-981-11	SPRING (SUS), RING	
52	4-238-396-11	KNOB (AMS)	
53	4-238-396-01	KNOB (AMS)	
54	4-240-476-01	PANEL, FRONT	
55	3-931-378-51	KNOB (F10)	
56	A-4676-885-A	HP BOARD, COMPLETE	
57	4-917-460-41	KNOB, POWER	
58	1-684-811-11	POWER-SW BOARD	
59	4-240-478-01	BASE (L), PANEL	
60	4-240-490-01	SPRING (5CD), TENSION COIL	
61	4-240-485-01	BUTTON (5CD)	
62	4-240-481-01	LID (5CD)	
63	1-684-813-11	RM BOARD	
64	A-4676-879-A	LED BOARD, COMPLETE	
65	1-684-810-11	CD-SW BOARD	
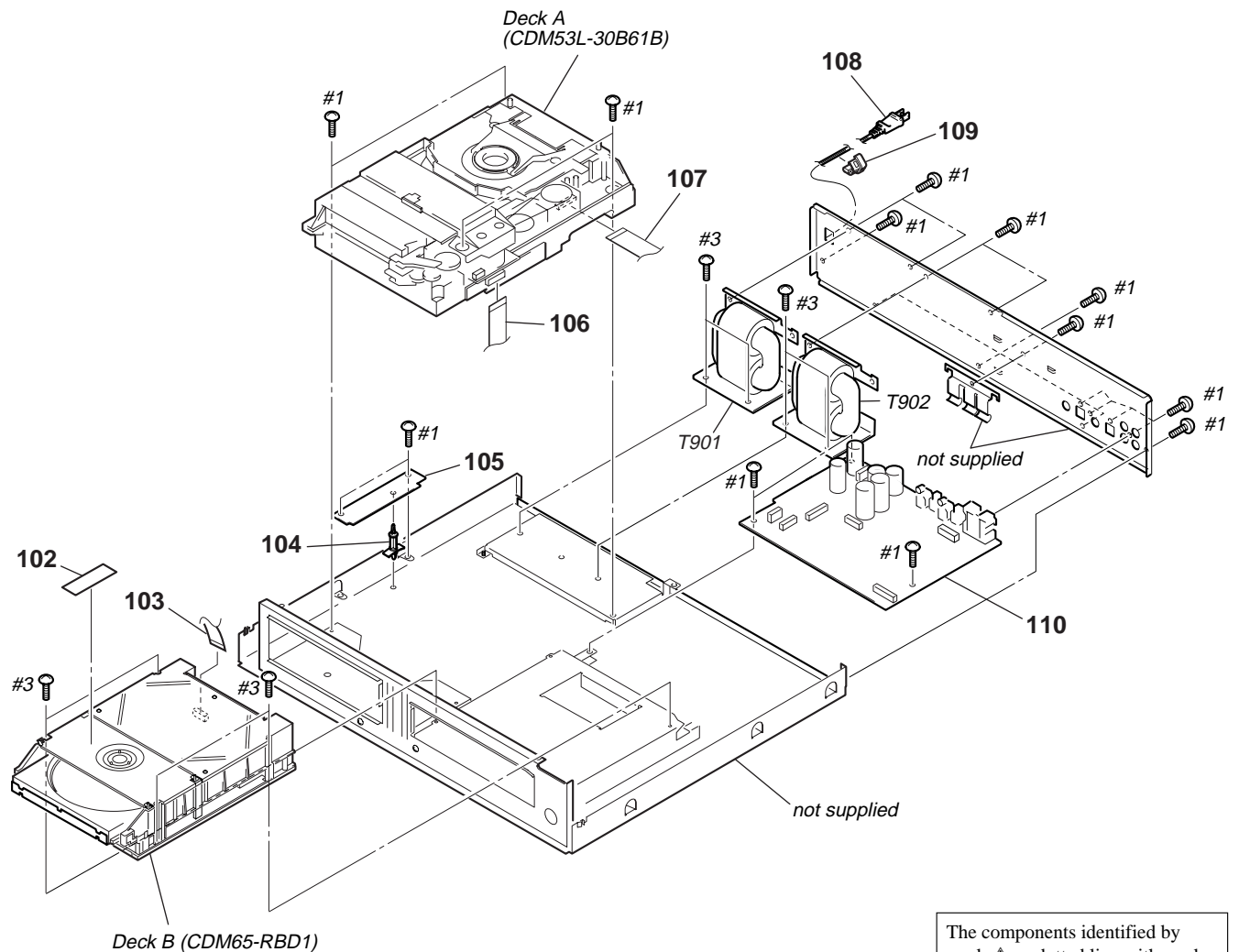
Ref. No.	Part No.	Description	Remarks
66	A-4676-881-A	DISPLAY BOARD, COMPLETE	
67	1-823-923-11	WIRE (FLAT TYPE) (21 CORE)	
68	4-240-486-01	BUTTON (FUNC)	
69	4-240-480-01	BASE (R), PANEL	
70	4-240-479-01	BASE (M), PANEL	
71	4-240-488-01	WINDOW (FL)	
72	4-240-487-01	WINDOW (RM)	
73	4-240-484-01	INDICATOR (5CD)	
74	4-996-686-03	HOLDER (FL)	
75	4-949-935-41	CUSHION (FL)	
76	4-951-620-01	SCREW (2.6X8), +BVTP	
FL750	1-518-789-11	INDICATOR TUBE, FLUORESCENT	
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	

8-3. CHASSIS SECTION

Deck A (CDM53L-30B61B)

Deck B (CDM65-RBD1)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
* 102	4-884-503-01	LABEL, CAUTION, LASER		* 109	3-703-244-00	BUSHING (2104), CORD	
103	1-823-922-11	WIRE (FLAT TYPE) (11 CORE)		110	A-4676-878-A	MAIN BOARD, COMPLETE	
* 104	4-954-051-51	HOLDER, PC BOARD		111	3-703-249-21	SCREW, S TIGHT, +PTTWH (M3X8)	
105	1-684-812-11	AC BOARD					
106	1-823-925-11	WIRE (FLAT TYPE) (17 CORE)		⚠T901	1-437-791-11	TRANSFORMER, POWER	
				⚠T902	1-437-792-11	TRANSFORMER, POWER	
107	1-823-924-11	WIRE (FLAT TYPE) (23 CORE)		#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	
⚠108	1-790-154-31	CORD, POWER		#3	7-685-646-71	SCREW +BVTP 3X8 TYPE2 IT-3	

8-4. CD PLAY MECHANISM DECK SECTION (DECK A)-1
(CDM53L-30B61B)
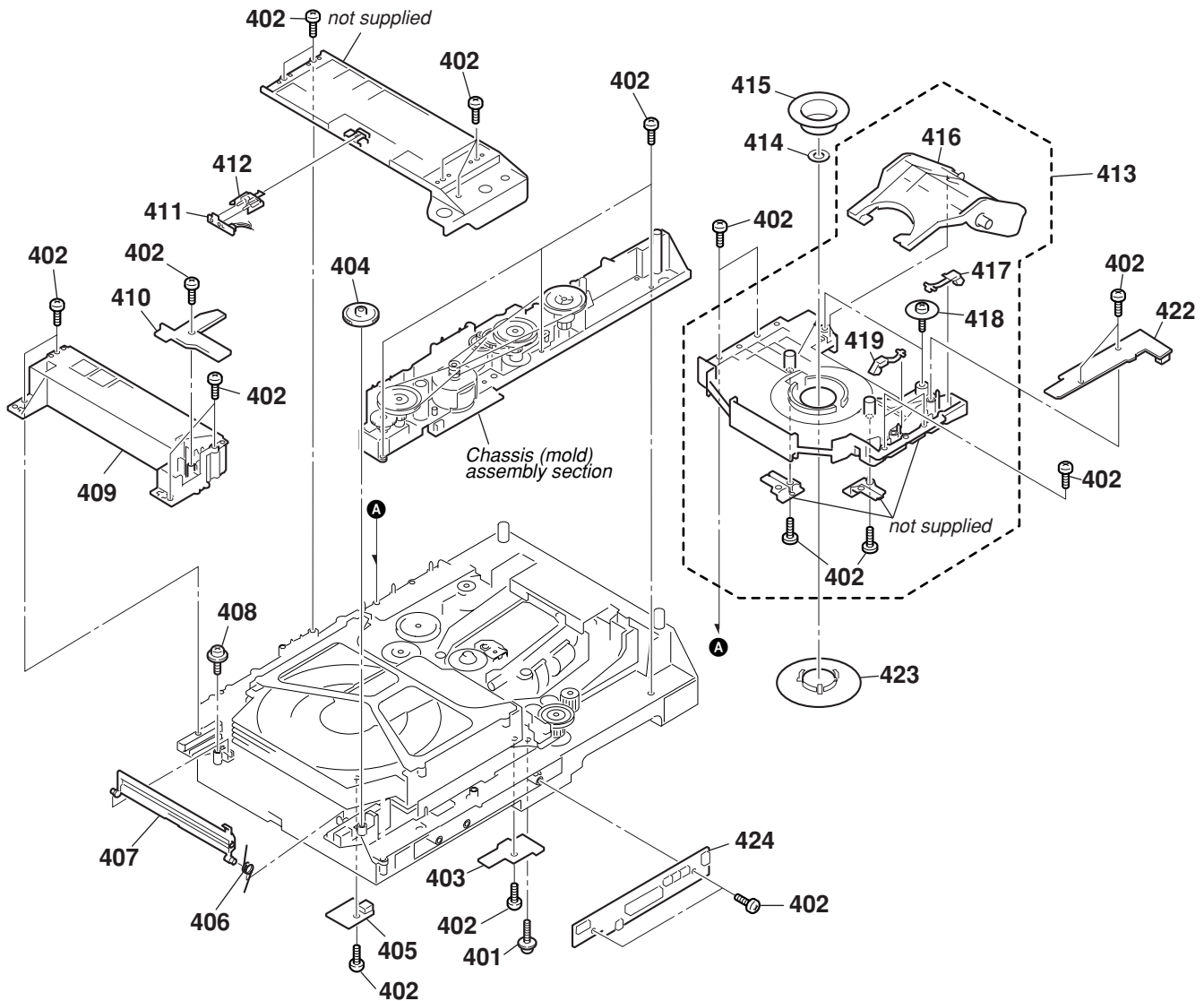
Ref. No.	Part No.	Description	Remarks
401	3-341-549-01	SCREW(2.6X12)(DIA.7.5),+PTP WH	
402	4-951-620-01	SCREW (2.6X8), +BVTP	
403	1-675-724-11	INIT/COUNT SW BOARD	
404	4-211-215-01	GEAR (EJECT)	
405	1-675-726-11	SENSOR BOARD	
406	4-212-676-01	SPRING (LID), TORSION	
407	4-221-532-11	LID (DISC)	
408	4-933-134-01	SCREW (M2.6), +PTPWH	
409	A-4672-909-C	BASE (GUIDE) ASSY, FITTING	
410	1-675-725-11	OUT SW BOARD	
411	1-675-727-11	SENSOR 2 BOARD	
412	4-964-461-02	HOLDER (SENSOR)	

Ref. No.	Part No.	Description	Remarks
413	A-4746-928-A	BASE (MAGNET) ASSY, FITTING	
414	4-228-414-01	BRACKET (YOKE)	
415	4-227-513-01	PULLEY (4SB)	
416	4-222-783-01	LEVER (LIFTER)	
417	4-221-530-01	LEVER (DETECTION C)	
418	4-985-672-01	SCREW (+PTPWH M2.6), FLOATING	
419	4-221-528-01	LEVER (DETECTION A)	
422	1-675-723-11	IN SW BOARD	
423	X-4952-916-1	PULLEY (FK) ASSY, CHUCKING	
424	1-675-722-11	CONNECTOR BOARD	

8-5. CD PLAY MECHANISM DECK SECTION (DECK A)-2
   (CDM53L-30B61B)
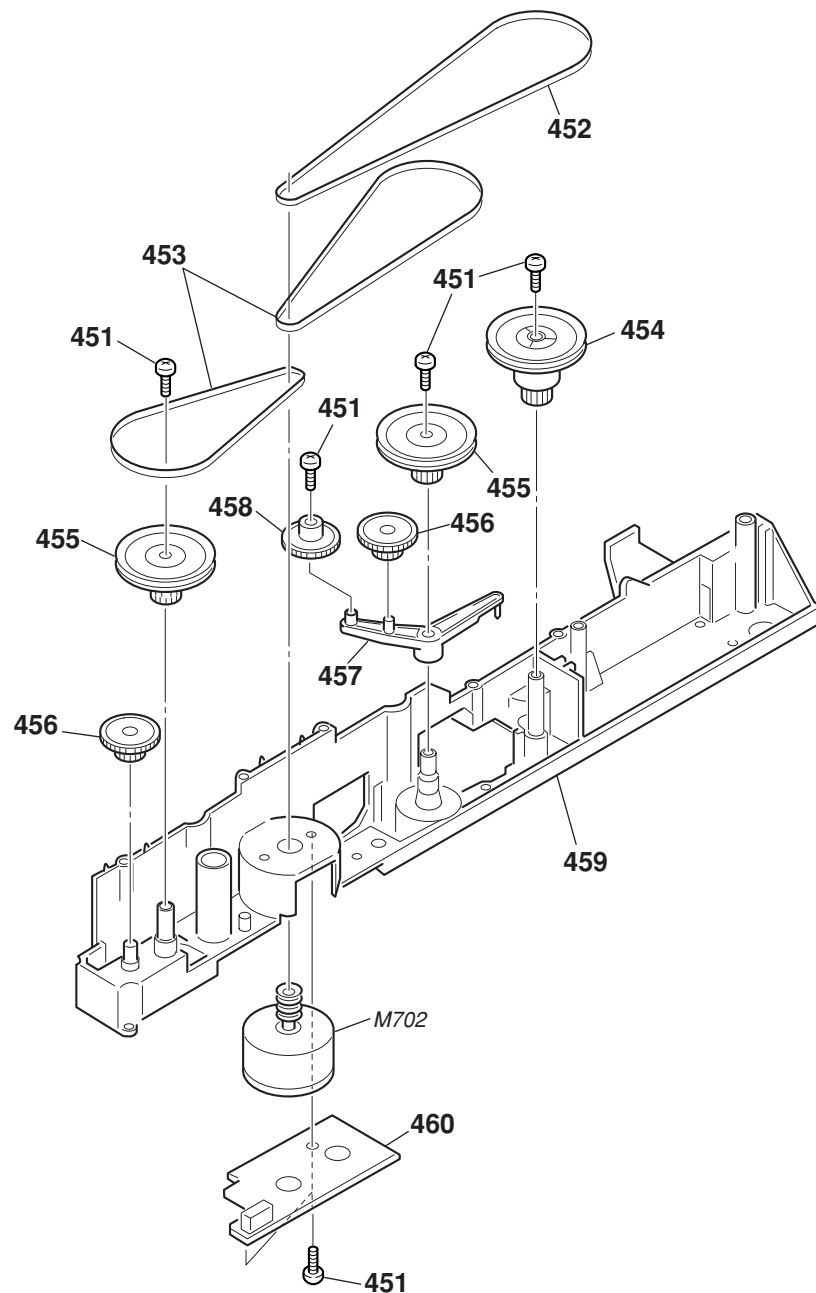
Ref. No.	Part No.	Description	Remarks
451	4-951-620-01	SCREW (2.6X8), +BVTP	
452	4-211-235-01	BELT (COMMUNICATION)	
453	4-241-745-01	BELT (LOADING 1)	
454	4-211-231-01	PULLEY (MODE)	
455	4-211-214-01	PULLEY (LD)	

Ref. No.	Part No.	Description	Remarks
456	4-211-232-01	GEAR (LD DECELERATION)	
457	4-211-228-01	LEVER (GOOSENECK)	
458	4-214-130-01	GEAR (TRAY)	
459	4-221-505-11	CHASSIS (MOLD B)	
460	1-675-728-11	LOAD MOTOR BOARD	
M702	X-4950-342-1	MOTOR (LOADING) ASSY	

8-6. CD PLAY MECHANISM DECK SECTION (DECK A)-3
(CDM53L-30B61B)
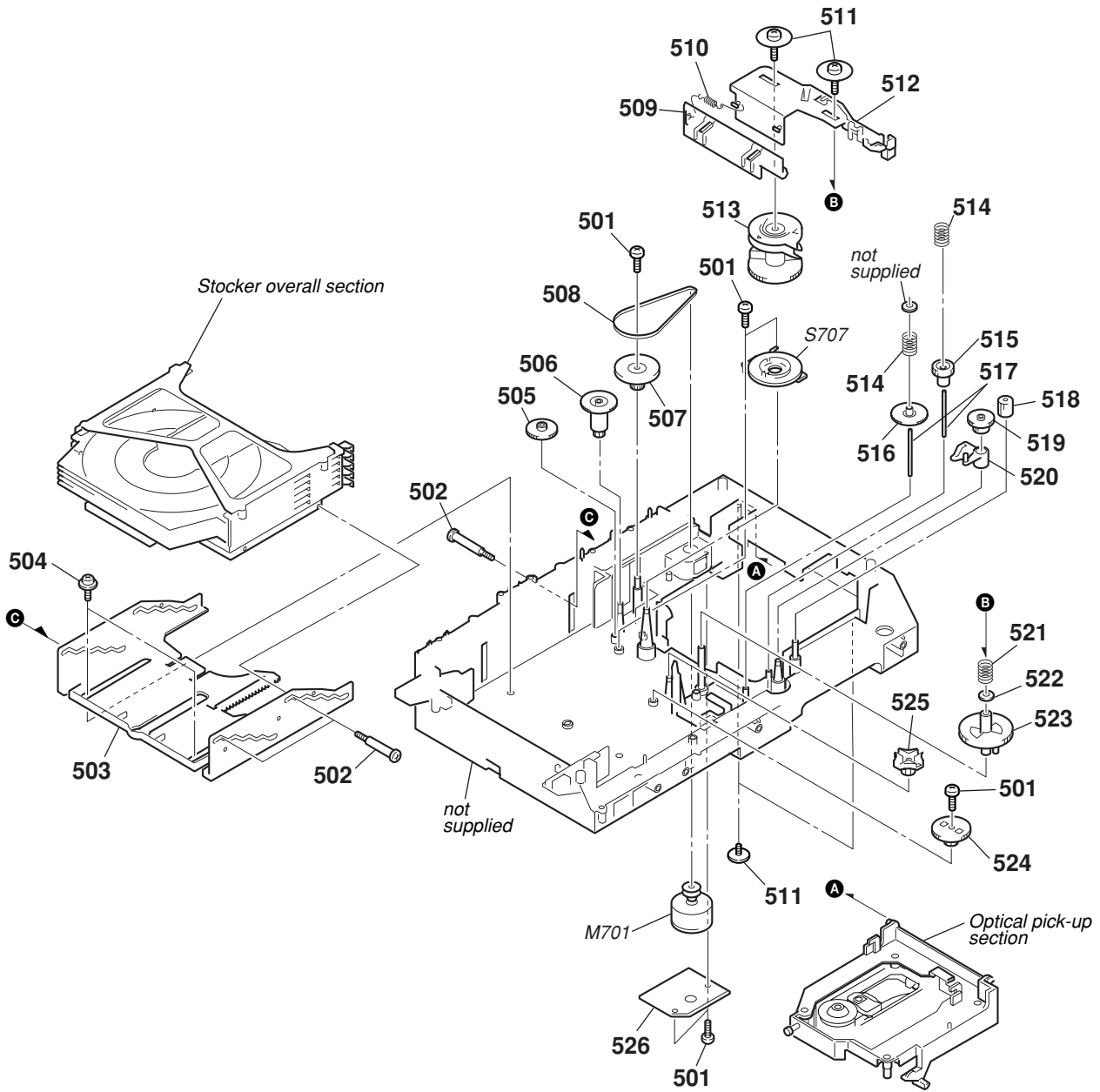
Ref. No.	Part No.	Description	Remarks
501	4-951-620-01	SCREW (2.6X8), +BVTP	
502	4-211-244-01	SCREW, STEP	
503	4-211-223-01	SLIDER (U/D)	
504	4-933-134-01	SCREW (M2.6), +PTPWH	
505	4-211-215-01	GEAR (EJECT)	
506	4-211-232-01	GEAR (MODE DECELERATION)	
507	4-211-214-01	PULLEY (LD)	
508	4-211-237-01	BELT (MODE)	
509	4-212-677-01	SLIDER (SHUTTER)	
510	4-212-678-01	SPRING (SHUTTER), TENSION	
511	4-985-672-01	SCREW (+PTPWH M2.6), FLOATING	
512	4-211-233-01	SLIDER (SELECTION)	
513	4-211-230-01	GEAR (CHUCKING)	
514	4-211-245-01	SPRING, COMPRESSION	
515	4-211-221-01	GEAR (LD MOVABLE)	

Ref. No.	Part No.	Description	Remarks
516	4-211-217-01	GEAR (SELECTION)	
517	4-211-242-11	SHAFT (SELECTION GEAR)	
518	4-211-240-01	GEAR (LD DECELERATION B)	
519	4-211-216-01	GEAR (RELAY)	
520	4-211-241-01	LEVER (SELECTION)	
521	4-216-879-01	SPRING (GEAR), COMPRESSION	
522	3-701-446-21	WASHER	
523	4-211-218-01	GEAR (GEAR A)	
524	4-211-220-01	GEAR (U/D SLIDER)	
525	4-211-219-01	GEAR (GEAR B)	
526	1-675-729-11	CLAMP MOTOR BOARD	
M701	X-4950-341-1	MOTOR (CLAMP) ASSY (ELEVATOR UP/DOWN)	
S707	1-418-045-01	ENCODER, ROTARY	

8-7. STOCKER OVERALL, OPTICAL PICK-UP SECTION (DECK A)

CD base unit
(BU-30BBD61B)
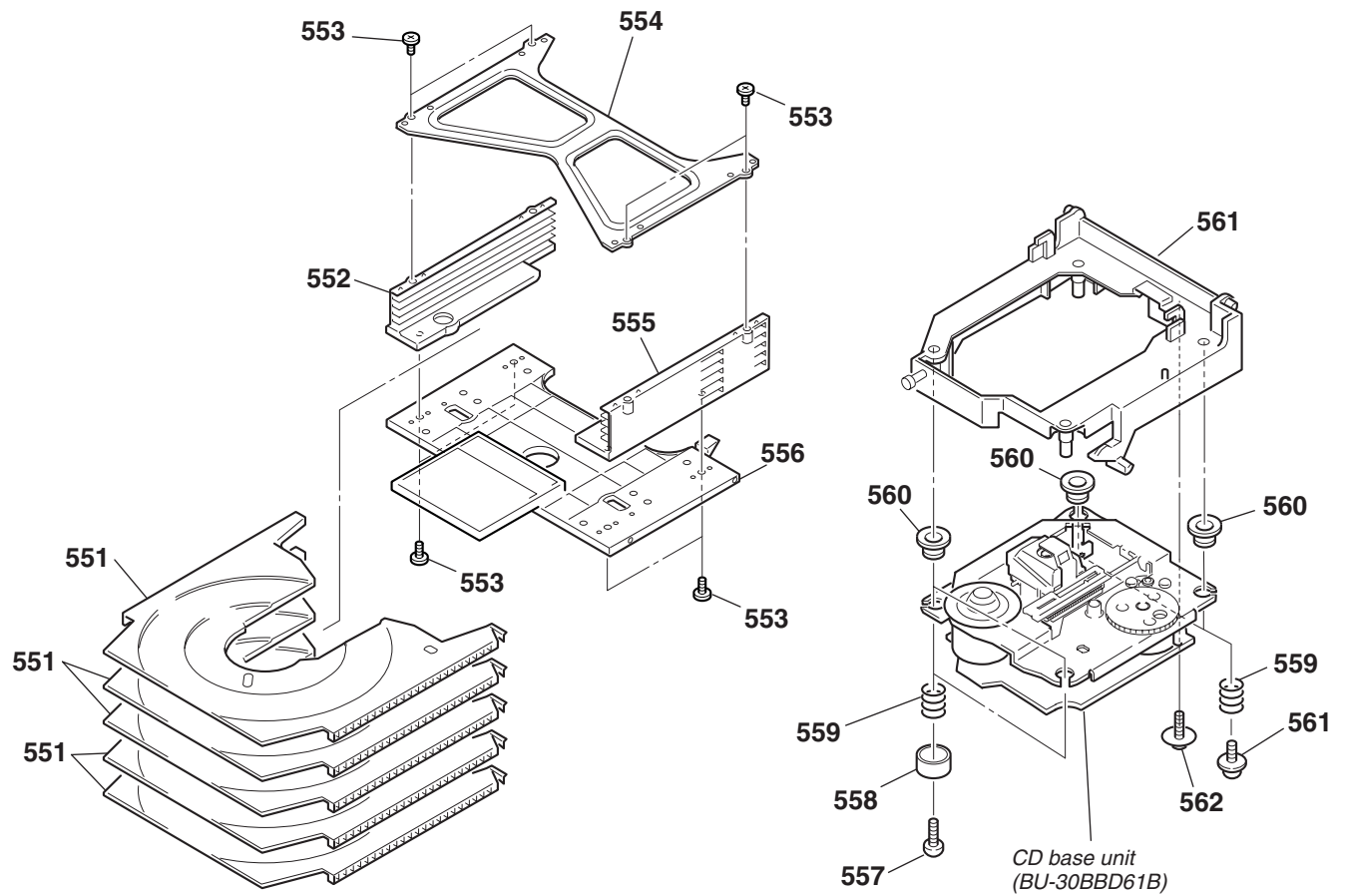
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
551	4-211-212-51	TRAY (SUB)		557	4-218-253-11	SCREW (M2.6), +BTTP	
552	4-211-210-01	STOCKER (L)		558	4-231-151-01	STOPPER (BU)	
553	4-218-253-21	SCREW (M2.6), +BTTP		559	4-227-045-11	SPRING (INSULATOR), COIL	
554	4-211-234-01	BRACKET (STOCKER T)		560	4-240-820-01	INSULATOR (B) (BU-30B)	
555	4-211-211-01	STOCKER (R)					
				561	X-4954-297-2	HOLDER (BU30) ASSY	
556	4-221-504-01	BASE (STOCKER), FITTING		562	4-227-899-01	SCREW (DIA. 12), FLOATING	

8-8. BASE UNIT (DECK A)
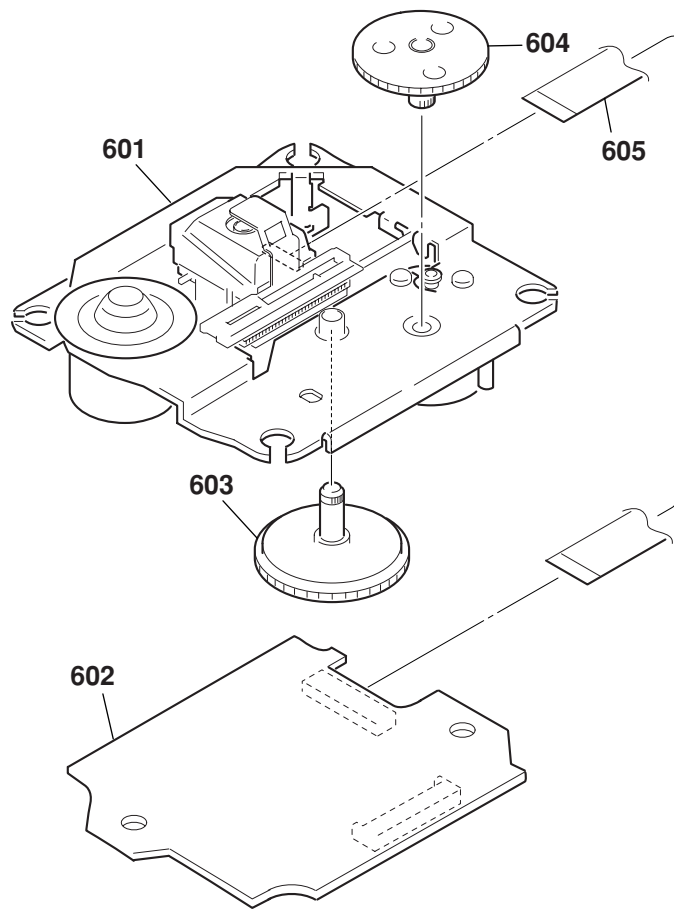
Ref. No.	Part No.	Description	Remarks
601	A-4735-885-A	BU-30B ASSY	
602	A-4727-463-A	BD BOARD, COMPLETE	
603	4-233-832-01	GEAR (LB)	
604	4-233-831-01	GEAR (LA)	
605	1-782-817-11	WIRE (FLAT TYPE) (16 CORE)	

8-9. CD-R MECHANISM DECK SECTION (DECK B)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
651	4-951-620-01	SCREW (2.6X8), +BVTP	
652	4-237-181-01	TRAY	
653	4-240-987-01	SHEET (DR)	
654	4-240-988-02	PULLEY (UPPER), PRESS	
655	4-237-172-01	HOLDER (MG)	
656	4-237-174-01	PULLEY (MAG)	
* 657	4-974-710-11	YOKE, PULLEY	
* 658	1-452-958-11	MAGNET (CHUCKING)	
659	4-999-537-01	BELT (LOADING)	
660	4-237-177-01	GEAR (A)	
661	4-237-176-02	PULLEY (CG)	
662	4-974-711-01	SCREW (2X5)(P TYIGHT),(+)PTTWH	
663	4-237-180-01	CAM (CH)	

Ref. No.	Part No.	Description	Remark
664	4-237-178-02	GEAR (B)	
665	4-237-179-02	GEAR (C)	
666	3-341-549-01	SCREW(2.6X8)(DIA.7.5),+ PTP WH	
667	4-237-168-01	SCREW, STEP	
668	4-237-167-01	SCREW (2X9) (G WITH),+P TAPPIN	
⚠ 669	8-583-104-01	OPTICAL PICK-UP KRM-220CAA	
670	1-823-651-11	CABLE, FLEXIBLE FLAT (32 CORE)	
671	4-237-182-01	CHASSIS	
672	A-4727-459-A	CD-R BOARD, COMPLETE	
673	4-232-682-01	CUSHION (66)	
M903	A-4735-557-A	MOTOR ASSY	

| AC | BD |

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
  uF: μF

SECTION 9
ELECTRICAL PARTS LIST

- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- COILS
  uH: μH
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA... , uPA... , μPA... ,
  uPB... , μPB... , uPC... , μPC... ,
  uPD..., μPD...

> The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

> When indicating parts by reference number, please include the board name.

Ref. No.	Part No.	Description			Remarks
	1-684-812-11	AC BOARD			
		********			
		< CAPACITOR >			
⚠ C901	1-113-925-11	CERAMIC	0.01uF	20%	250V
⚠ C902	1-113-925-11	CERAMIC	0.01uF	20%	250V
⚠ C903	1-113-920-11	CERAMIC	0.0022uF	20%	250V
⚠ C904	1-113-920-11	CERAMIC	0.0022uF	20%	250V
⚠ C905	1-113-920-11	CERAMIC	0.0022uF	20%	250V
		< CONNECTOR >			
CN901	1-564-321-00	PIN, CONNECTOR(3.96MM PITCH)2P			
CN902	1-564-321-00	PIN, CONNECTOR(3.96MM PITCH)2P			
* CN903	1-564-321-21	PIN, CONNECTOR(3.96MM PITCH)2P			
		< GROUND TERMINAL >			
EP901	1-537-771-21	TERMINAL BOARD, GROUND			
		< LINE FILTER >			
⚠ LF901	1-419-625-11	COIL, LINE FILTER			
****
	A-4727-463-A	BD BOARD, COMPLETE			
		*****************			
		< CAPACITOR >			
C101	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C102	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C103	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C104	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C107	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C108	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C109	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C110	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C111	1-126-607-11	ELECT CHIP	47uF	20%	4V
C112	1-126-607-11	ELECT CHIP	47uF	20%	4V
C113	1-126-209-11	ELECT CHIP	100uF	20%	4V
C114	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C115	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C117	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C118	1-115-156-11	CERAMIC CHIP	1uF		10V
C119	1-115-156-11	CERAMIC CHIP	1uF		10V
C120	1-126-607-11	ELECT CHIP	47uF	20%	4V
C151	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C152	1-115-416-11	CERAMIC CHIP	0.001uF	5%	25V
C153	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C163	1-117-681-11	ELECT CHIP	100uF	20%	16V
C164	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C165	1-124-779-00	ELECT CHIP	10uF	20%	16V

Ref. No.	Part No.	Description			Remarks
C166	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C167	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C168	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C169	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C171	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C178	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C179	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C182	1-128-995-21	ELECT CHIP	100uF	20%	10V
C201	1-126-246-11	ELECT CHIP	220uF	20%	4V
C202	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C203	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C204	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C205	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C207	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C209	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C210	1-115-414-11	CERAMIC CHIP	820PF	5%	25V
C211	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C212	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C213	1-115-414-11	CERAMIC CHIP	820PF	5%	25V
C214	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C215	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C216	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C218	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C219	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C221	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C222	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C223	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C224	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C225	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C227	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C229	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C230	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C231	1-128-995-21	ELECT CHIP	100uF	20%	10V
C232	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C234	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C235	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C236	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C252	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C253	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C254	1-115-156-11	CERAMIC CHIP	1uF		10V
C255	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
		< CONNECTOR >			
CN101	1-784-834-21	CONNECTOR, FFC(LIF(NON-ZIF))23P			
CN102	1-794-424-11	CONNECTOR, FCC/FPC 16P			
		< FERRITE BEAD >			
FB101	1-500-445-21	FERRITE	0UH		

Ref. No.	Part No.	Description			Remarks
		< IC >			
IC101	8-752-408-73	IC CXD3068Q			
IC102	8-759-713-71	IC AN41050			
IC103	8-752-089-74	IC CXA2581N-T4			
IC104	8-759-833-99	IC TC74HC4052AFT(EL)			
IC105	8-759-834-29	IC MC74VHC1G04DFT1			
IC201	8-759-460-72	IC BA033FP-E2			
		< COIL >			
L171	1-412-967-31	INDUCTOR	0.1uH		
L230	1-469-981-21	FERRITE	0uH		
		< TRANSISTOR >			
Q101	8-729-049-31	TRANSISTOR 2SB710A-RTX			
		< RESISTOR >			
R102	1-216-835-11	METAL CHIP	15K	5%	1/16W
R103	1-216-845-11	METAL CHIP	100K	5%	1/16W
R104	1-216-835-11	METAL CHIP	15K	5%	1/16W
R105	1-216-821-11	METAL CHIP	1K	5%	1/16W
R109	1-216-846-11	METAL CHIP	120K	5%	1/16W
R111	1-216-846-11	METAL CHIP	120K	5%	1/16W
R112	1-216-840-11	METAL CHIP	39K	5%	1/16W
R113	1-218-701-11	RES-CHIP	2.4K	5%	1/10W
R114	1-218-745-11	RES-CHIP	160K	5%	1/10W
R115	1-216-839-11	METAL CHIP	33K	5%	1/16W
R116	1-216-839-11	METAL CHIP	33K	5%	1/16W
R118	1-216-864-11	METAL CHIP	0	5%	1/16W
R120	1-216-846-11	METAL CHIP	120K	5%	1/16W
R122	1-216-845-11	METAL CHIP	100K	5%	1/16W
R123	1-216-797-11	METAL CHIP	10	5%	1/16W
R124	1-216-797-11	METAL CHIP	10	5%	1/16W
R125	1-216-839-11	METAL CHIP	33K	5%	1/16W
R126	1-216-839-11	METAL CHIP	33K	5%	1/16W
R151	1-216-833-11	METAL CHIP	10K	5%	1/16W
R152	1-216-837-11	METAL CHIP	22K	5%	1/16W
R165	1-216-864-11	METAL CHIP	0	5%	1/16W
R166	1-216-864-11	METAL CHIP	0	5%	1/16W
R167	1-216-864-11	METAL CHIP	0	5%	1/16W
R168	1-216-864-11	METAL CHIP	0	5%	1/16W
R169	1-216-864-11	METAL CHIP	0	5%	1/16W
R170	1-216-864-11	METAL CHIP	0	5%	1/16W
R177	1-216-821-11	METAL CHIP	1K	5%	1/16W
R178	1-216-864-11	METAL CHIP	0	5%	1/16W
R179	1-216-837-11	METAL CHIP	22K	5%	1/16W
R201	1-216-839-11	METAL CHIP	33K	5%	1/16W
R202	1-216-833-11	METAL CHIP	10K	5%	1/16W
R203	1-216-845-11	METAL CHIP	100K	5%	1/16W
R204	1-216-833-11	METAL CHIP	10K	5%	1/16W
R205	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R206	1-216-850-11	METAL CHIP	270K	5%	1/16W
R207	1-218-917-11	RES-CHIP	820K	5%	1/10W
R208	1-216-845-11	METAL CHIP	100K	5%	1/16W
R209	1-216-809-11	METAL CHIP	100	5%	1/16W
R212	1-216-809-11	METAL CHIP	100	5%	1/16W
R213	1-216-864-11	METAL CHIP	0	5%	1/16W
R214	1-216-864-11	METAL CHIP	0	5%	1/16W
R215	1-216-864-11	METAL CHIP	0	5%	1/16W
R216	1-216-813-11	METAL CHIP	220	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R217	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R218	1-216-821-11	METAL CHIP	1K	5%	1/16W
R219	1-216-821-11	METAL CHIP	1K	5%	1/16W
R226	1-216-809-11	METAL CHIP	100	5%	1/16W
R227	1-216-839-11	METAL CHIP	33K	5%	1/16W
R228	1-216-849-11	METAL CHIP	220K	5%	1/16W
R229	1-216-819-11	METAL CHIP	680	5%	1/16W
R230	1-216-864-11	METAL CHIP	0	5%	1/16W
R234	1-216-809-11	METAL CHIP	100	5%	1/16W
		< NETWORK >			
RN201	1-233-576-11	RES, CHIP NETWORK 100			
RN202	1-233-576-11	RES, CHIP NETWORK 100			
		< VARIABLE RESISTOR >			
RV101	1-223-997-21	RES, CARBON ADJ VAR 47K (E-F BALANCE)			
		< VIBRATOR >			
X201	1-767-518-11	VIBRATOR, CRYSTAL (33.8MHz)			

****

	A-4727-459-A	CD-R BOARD, COMPLETE

****

Ref. No.	Part No.	Description			Remarks
		< CAPACITOR >			
C101	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C102	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C103	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C104	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C105	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C106	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C107	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C108	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C109	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C110	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C111	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C112	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C113	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C114	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C115	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C116	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C117	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
C118	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C119	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C120	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C121	1-126-392-11	ELECT CHIP	100uF	20%	6.3V
C122	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C123	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C124	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C125	1-128-934-91	CERAMIC CHIP	0.33uF	20%	10V
C126	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C128	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
C129	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C130	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C131	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C132	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C133	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C134	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C135	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C136	1-126-391-11	ELECT CHIP	47uF	20%	6.3V

CD-R

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
C137	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C230	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C138	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C232	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C139	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C233	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C140	1-126-390-11	ELECT CHIP	22uF	20%	6.3V	C234	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C141	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C235	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C142	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C236	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C143	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C237	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C144	1-128-934-91	CERAMIC CHIP	0.33uF	20%	10V	C238	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C145	1-128-934-91	CERAMIC CHIP	0.33uF	20%	10V	C239	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C146	1-128-934-91	CERAMIC CHIP	0.33uF	20%	10V	C240	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C150	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C241	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C151	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C242	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C156	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C244	1-126-390-11	ELECT CHIP	22uF	20%	6.3V
C157	1-126-390-11	ELECT CHIP	22uF	20%	6.3V	C245	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C158	1-126-390-11	ELECT CHIP	22uF	20%	6.3V	C246	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C160	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C247	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C178	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	C248	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C179	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C249	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C180	1-126-395-11	ELECT	22uF	20%	16V	C250	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C181	1-127-573-11	CERAMIC CHIP	1uF	10%	16V	C251	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C182	1-127-573-11	CERAMIC CHIP	1uF	10%	16V	C254	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C183	1-127-573-11	CERAMIC CHIP	1uF	10%	16V	C257	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C184	1-126-395-11	ELECT	22uF	20%	16V	C258	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C185	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C259	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C186	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C260	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C187	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C262	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C188	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C263	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C189	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C268	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C190	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	C269	1-126-392-11	ELECT CHIP	100uF	20%	6.3V
C191	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C270	1-126-396-11	ELECT CHIP	47uF	20%	16V
C192	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C271	1-126-392-11	ELECT CHIP	100uF	20%	6.3V
C193	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C272	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C194	1-126-395-11	ELECT	22uF	20%	16V	C273	1-126-391-11	ELECT CHIP	47uF	20%	6.3V
C200	1-126-390-11	ELECT CHIP	22uF	20%	6.3V	C275	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C201	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C289	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C202	1-126-392-11	ELECT CHIP	100uF	20%	6.3V	C301	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C203	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C302	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C204	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C303	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C205	1-126-391-11	ELECT CHIP	47uF	20%	6.3V	C304	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C206	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C501	1-126-396-11	ELECT CHIP	47uF	20%	16V
C207	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C502	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C208	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C506	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C209	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C508	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C210	1-126-392-11	ELECT CHIP	100uF	20%	6.3V	C509	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C212	1-126-390-11	ELECT CHIP	22uF	20%	6.3V	C510	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C213	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C511	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C214	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C512	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C216	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C513	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C217	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C514	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C218	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C517	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C219	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C518	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C220	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C519	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C221	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C520	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C222	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C521	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C223	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	C526	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C224	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V			< CONNECTOR >			
C225	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V						
C226	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	CN101	1-784-894-11	CONNECTOR, FFC/FPC 32P			
C227	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V	CN102	1-816-220-21	CONNECTOR, FFC/FPC 11P			
C228	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V	CN103	1-816-220-21	CONNECTOR, FFC/FPC 11P			
						CN104	1-770-160-21	PIN, CONNECTOR (PC BOARD) 2P			

Ref. No.	Part No.	Description			Remarks
CN110	1-784-370-21	CONNECTOR, FFC/FPC 11P			
* CN111	1-764-250-11	PIN, CONNECTOR (PC BOARD) 4P			
CN112	1-784-365-21	CONNECTOR, FFC/FPC 5P			
CN115	1-770-160-21	PIN, CONNECTOR (PC BOARD) 2P			
CN121	1-774-731-21	PIN, CONNECTOR (PC BOARD) 5P			
		< DIODE >			
D101	8-719-988-61	DIODE 1SS355TE-17			
D102	8-719-988-61	DIODE 1SS355TE-17			
		< FERRITE BEAD >			
FB101	1-469-379-11	FERRITE	0UH		
FB102	1-469-379-11	FERRITE	0UH		
FB103	1-469-379-11	FERRITE	0UH		
		< IC >			
IC101	6-701-749-01	IC AK8567			
IC102	8-759-058-56	IC TC7S02FU(TE85R)			
IC103	8-759-337-41	IC NJM2902V-TE2			
IC104	8-759-478-92	IC TC7SET04FU(TE85R)			
IC110	8-759-594-95	IC L4931ABD33-TR			
IC150	8-759-673-37	IC SN74HC00APWR			
IC171	6-701-746-01	IC BA5937AFP-E2			
IC172	8-759-593-08	IC LB11698H-TE-L			
IC201	6-701-747-01	IC LC89587-UK1-E			
IC202	8-759-597-78	IC MSM54V16258BSL-40TSK			
IC204	8-759-058-60	IC TC7SU04FU(TE85R)			
IC301	8-759-549-25	IC SN74LVU04APWR			
IC302	8-759-196-96	IC TC7SH08FU-TE85R			
IC501	6-701-748-01	IC HD64F3064BFBL25			
IC502	6-801-552-01	IC BR93LC46RF-WE2			
IC504	8-759-485-79	IC TC7SET08FU(TE85R)			
IC505	8-759-599-46	IC TC7W08FK(TE85R)			
IC506	8-759-485-79	IC TC7SET08FU(TE85R)			
		< COIL >			
L101	1-414-398-11	INDUCTOR	10uH		
L102	1-414-398-11	INDUCTOR	10uH		
L103	1-414-392-41	INDUCTOR	1uH		
L202	1-414-392-41	INDUCTOR	1uH		
L203	1-414-392-41	INDUCTOR	1uH		
L204	1-414-392-41	INDUCTOR	1uH		
L205	1-414-392-41	INDUCTOR	1uH		
L207	1-414-392-41	INDUCTOR	1uH		
L208	1-414-392-41	INDUCTOR	1uH		
L301	1-414-392-41	INDUCTOR	1uH		
L303	1-414-392-41	INDUCTOR	1uH		
L501	1-414-392-41	INDUCTOR	1uH		
L503	1-414-392-41	INDUCTOR	1uH		
		< TRANSISTOR >			
Q170	8-729-900-53	TRANSISTOR DTC114EK			
Q501	8-729-900-53	TRANSISTOR DTC114EK			
		< RESISTOR >			
R101	1-216-809-11	METAL CHIP	100	5%	1/16W
R102	1-216-809-11	METAL CHIP	100	5%	1/16W
R103	1-216-809-11	METAL CHIP	100	5%	1/16W
R104	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R105	1-216-864-11	METAL CHIP	0	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R106	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R107	1-216-857-11	METAL CHIP	1M	5%	1/16W
R108	1-216-809-11	METAL CHIP	100	5%	1/16W
R109	1-216-809-11	METAL CHIP	100	5%	1/16W
R110	1-216-809-11	METAL CHIP	100	5%	1/16W
R111	1-218-883-11	METAL CHIP	33K	0.5%	1/10W
R112	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R113	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W
R114	1-218-847-11	METAL CHIP	1K	0.5%	1/10W
R116	1-218-847-11	METAL CHIP	1K	0.5%	1/10W
R120	1-216-809-11	METAL CHIP	100	5%	1/16W
R121	1-216-809-11	METAL CHIP	100	5%	1/16W
R122	1-216-857-11	METAL CHIP	1M	5%	1/16W
R123	1-216-864-11	METAL CHIP	0	5%	1/16W
R124	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R125	1-216-797-11	METAL CHIP	10	5%	1/16W
R126	1-216-864-11	METAL CHIP	0	5%	1/16W
R127	1-218-883-11	METAL CHIP	33K	0.5%	1/10W
R128	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R131	1-216-864-11	METAL CHIP	0	5%	1/16W
R133	1-216-864-11	METAL CHIP	0	5%	1/16W
R134	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R135	1-218-863-11	METAL CHIP	4.7K	0.5%	1/10W
R136	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R137	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W
R139	1-216-833-11	METAL CHIP	10K	5%	1/16W
R140	1-216-833-11	METAL CHIP	10K	5%	1/16W
R141	1-216-833-11	METAL CHIP	10K	5%	1/16W
R142	1-216-833-11	METAL CHIP	10K	5%	1/16W
R151	1-216-864-11	METAL CHIP	0	5%	1/16W
R152	1-216-864-11	METAL CHIP	0	5%	1/16W
R153	1-216-809-11	METAL CHIP	100	5%	1/16W
R154	1-216-809-11	METAL CHIP	100	5%	1/16W
R155	1-216-809-11	METAL CHIP	100	5%	1/16W
R156	1-216-809-11	METAL CHIP	100	5%	1/16W
R157	1-216-797-11	METAL CHIP	10	5%	1/16W
R170	1-216-797-11	METAL CHIP	10	5%	1/16W
R171	1-216-797-11	METAL CHIP	10	5%	1/16W
R172	1-216-797-11	METAL CHIP	10	5%	1/16W
R173	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R176	1-216-864-11	METAL CHIP	0	5%	1/16W
R177	1-216-864-11	METAL CHIP	0	5%	1/16W
R186	1-216-833-11	METAL CHIP	10K	5%	1/16W
R187	1-216-833-11	METAL CHIP	10K	5%	1/16W
R188	1-216-864-11	METAL CHIP	0	5%	1/16W
R189	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R190	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R192	1-216-864-11	METAL CHIP	0	5%	1/16W
R193	1-220-810-11	RES-CHIP	0.39	1%	1/2W
R194	1-216-864-11	METAL CHIP	0	5%	1/16W
R196	1-216-864-11	METAL CHIP	0	5%	1/16W
R198	1-216-864-11	METAL CHIP	0	5%	1/16W
R200	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R201	1-216-864-11	METAL CHIP	0	5%	1/16W
R202	1-216-817-11	METAL CHIP	470	5%	1/16W
R203	1-216-864-11	METAL CHIP	0	5%	1/16W
R204	1-216-864-11	METAL CHIP	0	5%	1/16W
R205	1-216-864-11	METAL CHIP	0	5%	1/16W
R206	1-216-864-11	METAL CHIP	0	5%	1/16W
R207	1-216-813-11	METAL CHIP	220	5%	1/16W

CD-R

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
R208	1-216-864-11	METAL CHIP	0	5%	1/16W	R302	1-216-845-11	METAL CHIP	100K	5%	1/16W
R209	1-216-864-11	METAL CHIP	0	5%	1/16W	R303	1-216-833-11	METAL CHIP	10K	5%	1/16W
R210	1-216-864-11	METAL CHIP	0	5%	1/16W	R304	1-216-833-11	METAL CHIP	10K	5%	1/16W
R211	1-216-864-11	METAL CHIP	0	5%	1/16W	R305	1-216-864-11	METAL CHIP	0	5%	1/16W
R212	1-216-833-11	METAL CHIP	10K	5%	1/16W	R307	1-216-864-11	METAL CHIP	0	5%	1/16W
R213	1-216-817-11	METAL CHIP	470	5%	1/16W	R320	1-216-864-11	METAL CHIP	0	5%	1/16W
R215	1-216-864-11	METAL CHIP	0	5%	1/16W	R321	1-216-864-11	METAL CHIP	0	5%	1/16W
R216	1-218-875-11	METAL CHIP	15K	0.5%	1/10W	R322	1-216-864-11	METAL CHIP	0	5%	1/16W
R217	1-216-864-11	METAL CHIP	0	5%	1/16W	R323	1-216-864-11	METAL CHIP	0	5%	1/16W
R218	1-216-864-11	METAL CHIP	0	5%	1/16W	R324	1-216-864-11	METAL CHIP	0	5%	1/16W
R219	1-216-801-11	METAL CHIP	22	5%	1/16W	R325	1-216-864-11	METAL CHIP	0	5%	1/16W
R220	1-216-801-11	METAL CHIP	22	5%	1/16W	R350	1-216-821-11	METAL CHIP	1K	5%	1/16W
R221	1-216-801-11	METAL CHIP	22	5%	1/16W	R351	1-216-821-11	METAL CHIP	1K	5%	1/16W
R222	1-216-801-11	METAL CHIP	22	5%	1/16W	R353	1-216-833-11	METAL CHIP	10K	5%	1/16W
R223	1-216-864-11	METAL CHIP	0	5%	1/16W	R354	1-216-833-11	METAL CHIP	10K	5%	1/16W
R224	1-216-864-11	METAL CHIP	0	5%	1/16W	R356	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R225	1-216-833-11	METAL CHIP	10K	5%	1/16W	R369	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R226	1-216-864-11	METAL CHIP	0	5%	1/16W	R370	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R227	1-216-797-11	METAL CHIP	10	5%	1/16W	R502	1-216-809-11	METAL CHIP	100	5%	1/16W
R228	1-216-833-11	METAL CHIP	10K	5%	1/16W	R503	1-216-809-11	METAL CHIP	100	5%	1/16W
R229	1-216-864-11	METAL CHIP	0	5%	1/16W	R504	1-216-864-11	METAL CHIP	0	5%	1/16W
R230	1-216-817-11	METAL CHIP	470	5%	1/16W	R505	1-216-841-11	METAL CHIP	47K	5%	1/16W
R231	1-216-809-11	METAL CHIP	100	5%	1/16W	R506	1-216-864-11	METAL CHIP	0	5%	1/16W
R232	1-216-864-11	METAL CHIP	0	5%	1/16W	R507	1-216-864-11	METAL CHIP	0	5%	1/16W
R239	1-216-789-11	METAL CHIP	2.2	5%	1/16W	R508	1-216-864-11	METAL CHIP	0	5%	1/16W
R240	1-216-789-11	METAL CHIP	2.2	5%	1/16W	R509	1-216-833-11	METAL CHIP	10K	5%	1/16W
R241	1-216-809-11	METAL CHIP	100	5%	1/16W	R511	1-216-864-11	METAL CHIP	0	5%	1/16W
R242	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W	R513	1-216-864-11	METAL CHIP	0	5%	1/16W
R243	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W	R515	1-216-864-11	METAL CHIP	0	5%	1/16W
R244	1-216-864-11	METAL CHIP	0	5%	1/16W	R516	1-216-864-11	METAL CHIP	0	5%	1/16W
R245	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R517	1-216-864-11	METAL CHIP	0	5%	1/16W
R246	1-216-833-11	METAL CHIP	10K	5%	1/16W	R518	1-216-864-11	METAL CHIP	0	5%	1/16W
R248	1-218-831-11	METAL CHIP	220	0.5%	1/10W	R519	1-216-864-11	METAL CHIP	0	5%	1/16W
R250	1-218-871-11	METAL CHIP	10K	0.5%	1/10W	R520	1-216-833-11	METAL CHIP	10K	5%	1/16W
R251	1-218-879-11	METAL CHIP	22K	0.5%	1/10W	R522	1-216-845-11	METAL CHIP	100K	5%	1/16W
R253	1-216-864-11	METAL CHIP	0	5%	1/16W	R523	1-216-864-11	METAL CHIP	0	5%	1/16W
R254	1-216-857-11	METAL CHIP	1M	5%	1/16W	R524	1-216-845-11	METAL CHIP	100K	5%	1/16W
R258	1-216-833-11	METAL CHIP	10K	5%	1/16W	R526	1-216-864-11	METAL CHIP	0	5%	1/16W
R260	1-216-833-11	METAL CHIP	10K	5%	1/16W	R527	1-216-864-11	METAL CHIP	0	5%	1/16W
R262	1-218-871-11	METAL CHIP	10K	0.5%	1/10W	R528	1-216-864-11	METAL CHIP	0	5%	1/16W
R263	1-218-871-11	METAL CHIP	10K	0.5%	1/10W	R529	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R264	1-216-797-11	METAL CHIP	10	5%	1/16W	R530	1-216-864-11	METAL CHIP	0	5%	1/16W
R265	1-218-833-11	METAL CHIP	270	0.5%	1/10W	R532	1-216-864-11	METAL CHIP	0	5%	1/16W
R267	1-218-883-11	METAL CHIP	33K	0.5%	1/10W	R533	1-216-864-11	METAL CHIP	0	5%	1/16W
R268	1-218-864-11	METAL CHIP	5.1K	0.5%	1/10W	R534	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R269	1-216-817-11	METAL CHIP	470	5%	1/16W	R535	1-216-864-11	METAL CHIP	0	5%	1/16W
R270	1-218-847-11	METAL CHIP	1K	0.5%	1/10W	R536	1-216-864-11	METAL CHIP	0	5%	1/16W
R271	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W	R537	1-216-864-11	METAL CHIP	0	5%	1/16W
R274	1-218-871-11	METAL CHIP	10K	0.5%	1/10W	R538	1-216-864-11	METAL CHIP	0	5%	1/16W
R276	1-218-843-11	METAL CHIP	680	0.5%	1/10W	R539	1-216-864-11	METAL CHIP	0	5%	1/16W
R277	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W	R540	1-216-833-11	METAL CHIP	10K	5%	1/16W
R278	1-218-285-11	RES-CHIP	75	5%	1/10W	R542	1-216-833-11	METAL CHIP	10K	5%	1/16W
R281	1-218-847-11	METAL CHIP	1K	0.5%	1/10W	R543	1-216-833-11	METAL CHIP	10K	5%	1/16W
R283	1-216-809-11	METAL CHIP	100	5%	1/16W	R544	1-216-864-11	METAL CHIP	0	5%	1/16W
R290	1-216-833-11	METAL CHIP	10K	5%	1/16W	R545	1-216-864-11	METAL CHIP	0	5%	1/16W
R291	1-216-811-11	METAL CHIP	150	5%	1/16W	R546	1-216-864-11	METAL CHIP	0	5%	1/16W
R292	1-216-833-11	METAL CHIP	10K	5%	1/16W	R547	1-216-864-11	METAL CHIP	0	5%	1/16W
R294	1-216-864-11	METAL CHIP	0	5%	1/16W	R548	1-216-864-11	METAL CHIP	0	5%	1/16W
R300	1-216-833-11	METAL CHIP	10K	5%	1/16W	R549	1-216-864-11	METAL CHIP	0	5%	1/16W
R301	1-216-845-11	METAL CHIP	100K	5%	1/16W	R550	1-216-864-11	METAL CHIP	0	5%	1/16W

| CD-R | CD SW | CLAMP MOTOR | CONNECTOR | DISPLAY |

Ref. No.	Part No.	Description			Remarks
R555	1-216-833-11	METAL CHIP	10K	5%	1/16W
R556	1-216-833-11	METAL CHIP	10K	5%	1/16W
		< NETWORK >			
RB201	1-233-810-21	RES, NETWORK 100K (3216)			
RB504	1-233-810-21	RES, NETWORK 100K (3216)			
RB505	1-233-810-21	RES, NETWORK 100K (3216)			
RB506	1-233-810-21	RES, NETWORK 100K (3216)			
RB508	1-233-810-21	RES, NETWORK 100K (3216)			
RB509	1-233-810-21	RES, NETWORK 100K (3216)			
RB510	1-233-810-21	RES, NETWORK 100K (3216)			
RB511	1-233-810-21	RES, NETWORK 100K (3216)			
RB512	1-233-810-21	RES, NETWORK 100K (3216)			
RB513	1-233-810-21	RES, NETWORK 100K (3216)			
RB514	1-233-810-21	RES, NETWORK 100K (3216)			
RB515	1-233-810-21	RES, NETWORK 100K (3216)			
RB516	1-233-810-21	RES, NETWORK 100K (3216)			
RB517	1-233-810-21	RES, NETWORK 100K (3216)			
RB518	1-233-810-21	RES, NETWORK 100K (3216)			
RB519	1-233-810-21	RES, NETWORK 100K (3216)			
RB520	1-233-810-21	RES, NETWORK 100K (3216)			
RB521	1-233-810-21	RES, NETWORK 100K (3216)			
RB522	1-233-810-21	RES, NETWORK 100K (3216)			
		< SWITCH >			
S170	1-786-288-11	SWITCH, DETECTION (LOAD IN)			
S171	1-786-288-11	SWITCH, DETECTION (LOAD OUT)			
		< VIBRATOR >			
X201	1-795-519-11	VIBRATOR, CRYSTAL (33.8688MHz)			
X501	1-795-622-21	VIBRATOR, CERAMIC (20MHz)			

****

Ref. No.	Part No.	Description			Remarks
	1-684-810-11	CD SW BOARD			

****

Ref. No.	Part No.	Description			Remarks
		< CONNECTOR >			
CN725	1-750-194-11	CONNECTOR, BOARD TO BOARD 4P			
		< RESISTOR >			
R725	1-249-417-11	CARBON	1K	5%	1/4W F
R726	1-249-419-11	CARBON	1.5K	5%	1/4W F
R727	1-249-421-11	CARBON	2.2K	5%	1/4W F
R728	1-249-425-11	CARBON	4.7K	5%	1/4W F
R729	1-249-429-11	CARBON	10K	5%	1/4W
		< SWITCH >			
S725	1-762-875-21	SWITCH, KEYBOARD (PLAY MODE)			
S726	1-762-875-21	SWITCH, KEYBOARD (TIME)			
S727	1-762-875-21	SWITCH, KEYBOARD (►)			
S728	1-762-875-21	SWITCH, KEYBOARD (❚❚)			
S729	1-762-875-21	SWITCH, KEYBOARD (■)			

****

Ref. No.	Part No.	Description			Remarks
	1-675-729-11	CLAMP MOTOR BOARD			

****

Ref. No.	Part No.	Description			Remarks
		< CAPACITOR >			
C701	1-162-306-11	CERAMIC	0.01uF	30%	16V
C702	1-126-964-11	ELECT	10uF	20%	50V
C706	1-162-306-11	CERAMIC	0.01uF	30%	16V
C711	1-162-306-11	CERAMIC	0.01uF	30%	16V

Ref. No.	Part No.	Description			Remarks
		< CONNECTOR >			
* CN712	1-568-954-11	PIN, CONNECTOR 5P			
		< DIODE >			
D701	8-719-983-66	DIODE MTZJ-T-72-3.6B			
		< IC >			
IC701	8-759-633-65	IC M54641L			
		< RESISTOR >			
R701	1-249-411-11	CARBON	330	5%	1/4W
R702	1-249-401-11	CARBON	47	5%	1/4W F

****

Ref. No.	Part No.	Description			Remarks
	1-675-722-11	CONNECTOR BOARD			

****

Ref. No.	Part No.	Description			Remarks
		< CONNECTOR >			
CN701	1-770-169-11	CONNECTOR, FFC/FPC 17P			
		< TRANSISTOR >			
Q701	8-729-029-66	TRANSISTOR DTC114ESA			
		< RESISTOR >			
R707	1-249-424-11	CARBON	3.9K	5%	1/4W F
R708	1-249-417-11	CARBON	1K	5%	1/4W F
R709	1-249-429-11	CARBON	10K	5%	1/4W

****

Ref. No.	Part No.	Description			Remarks
	A-4676-881-A	DISPLAY BOARD, COMPLETE			

****

Ref. No.	Part No.	Description			Remarks
	4-949-935-41	CUSHION (FL)			
*	4-996-686-03	HOLDER (FL)			
		< CAPACITOR >			
C751	1-124-261-00	ELECT	10uF	20%	50V
C753	1-124-261-00	ELECT	10uF	20%	50V
C760	1-124-261-00	ELECT	10uF	20%	50V
C761	1-162-294-31	CERAMIC	0.001uF	10%	50V
C762	1-162-294-31	CERAMIC	0.001uF	10%	50V
C763	1-164-159-11	CERAMIC	0.1uF		50V
C764	1-124-261-00	ELECT	10uF	20%	50V
C765	1-164-159-11	CERAMIC	0.1uF		50V
C766	1-162-215-31	CERAMIC	47PF	5%	50V
C767	1-164-159-11	CERAMIC	0.1uF		50V
C768	1-162-294-31	CERAMIC	0.001uF	10%	50V
C769	1-162-294-31	CERAMIC	0.001uF	10%	50V
C770	1-162-294-31	CERAMIC	0.001uF	10%	50V
		< CONNECTOR >			
CN700	1-779-289-11	CONNECTOR, FFC(LIF(NON-ZIF))21P			
* CN710	1-695-822-11	CONNECTOR, BOARD TO BOARD 8P			
CN720	1-750-185-11	CONNECTOR, BOARD TO BOARD 4P			
		< DIODE >			
D775	8-719-046-39	DIODE SEL5821A-TP15 (SBM)			

RCD-W222ES

Ref. No.	Part No.	Description				Remarks
		< FLUORESCENT INDICATOR TUBE >				
FL750	1-518-789-11	INDICATOR TUBE, FLUORESCENT				
		< IC >				
IC760	8-759-680-17	IC MSM9201-04GS-K				
		< TRANSISTOR >				
Q761	8-729-620-05	TRANSISTOR 2SC2603-EF				
Q762	8-729-620-05	TRANSISTOR 2SC2603-EF				
Q775	8-729-900-80	TRANSISTOR DTC114ES				
		< RESISTOR >				
R701	1-249-409-11	CARBON	220	5%	1/4W	F
R702	1-249-411-11	CARBON	330	5%	1/4W	
R703	1-249-413-11	CARBON	470	5%	1/4W	F
R704	1-249-415-11	CARBON	680	5%	1/4W	F
R711	1-249-409-11	CARBON	220	5%	1/4W	F
R712	1-249-411-11	CARBON	330	5%	1/4W	
R713	1-249-413-11	CARBON	470	5%	1/4W	F
R714	1-249-415-11	CARBON	680	5%	1/4W	F
R715	1-249-417-11	CARBON	1K	5%	1/4W	F
R716	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R717	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R718	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R719	1-249-429-11	CARBON	10K	5%	1/4W	
R721	1-249-409-11	CARBON	220	5%	1/4W	F
R722	1-249-411-11	CARBON	330	5%	1/4W	
R723	1-249-413-11	CARBON	470	5%	1/4W	F
R724	1-249-415-11	CARBON	680	5%	1/4W	F
R761	1-247-807-31	CARBON	100	5%	1/4W	
R762	1-247-807-31	CARBON	100	5%	1/4W	
R763	1-249-441-11	CARBON	100K	5%	1/4W	
R764	1-249-441-11	CARBON	100K	5%	1/4W	
R766	1-247-843-11	CARBON	3.3K	5%	1/4W	
R767	1-247-807-31	CARBON	100	5%	1/4W	
R768	1-247-807-31	CARBON	100	5%	1/4W	
R769	1-247-807-31	CARBON	100	5%	1/4W	
R770	1-247-807-31	CARBON	100	5%	1/4W	
R775	1-249-409-11	CARBON	220	5%	1/4W	F
		< VARIABLE RESISTOR >				
RV780	1-223-673-11	RES, VAR, CARBON 10K (REC LEVEL)				
		< SWITCH >				
S700	1-762-875-21	SWITCH, KEYBOARD (ERASE)				
S701	1-762-875-21	SWITCH, KEYBOARD (FINALIZE)				
S702	1-762-875-21	SWITCH, KEYBOARD (INPUT)				
S703	1-762-875-21	SWITCH, KEYBOARD (SBM)				
S704	1-762-875-21	SWITCH, KEYBOARD (REC ●)				
S710	1-762-875-21	SWITCH, KEYBOARD (►)				
S711	1-762-875-21	SWITCH, KEYBOARD (II)				
S712	1-762-875-21	SWITCH, KEYBOARD (■)				
S713	1-762-875-21	SWITCH, KEYBOARD (PLAY MODE)				
S714	1-762-875-21	SWITCH, KEYBOARD (TIME)				
S715	1-762-875-21	SWITCH, KEYBOARD (DISPLAY)				
S716	1-762-875-21	SWITCH, KEYBOARD (YES)				
S717	1-475-235-31	ENCODER, ROTARY				
		(I◁◁AMS▷▷I/PUSH ENTER)				
S718	1-762-875-21	SWITCH, KEYBOARD (MENU/NO)				

Ref. No.	Part No.	Description				Remarks
S719	1-762-875-21	SWITCH, KEYBOARD (CLEAR)				
S720	1-762-875-21	SWITCH, KEYBOARD (OPEN/CLOSE)				
S721	1-762-875-21	SWITCH, KEYBOARD (NOMAL)				
S722	1-762-875-21	SWITCH, KEYBOARD (HIGH)				
S723	1-475-235-31	ENCODER, ROTARY				
		(I◁◁AMS▷▷I/PUSH ENTER)				
S724	1-762-875-21	SWITCH, KEYBOARD (CLEAR)				

****

Ref. No.	Part No.	Description				Remarks
	A-4676-885-A	HP BOARD, COMPLETE				
		******************				
		< CAPACITOR >				
C811	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	
C812	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C821	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	
C822	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C831	1-135-835-91	ELECT	1000uF		16V	
C836	1-135-681-91	ELECT	100uF		25V	
C851	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C852	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
		< CONNECTOR >				
* CN851	1-564-709-11	PIN, CONNECTOR (SMALL TYPE) 7P				
		< IC >				
IC851	8-759-359-60	IC NJM4556AD-D				
		< JACK >				
J851	1-770-307-11	JACK (LARGE TYPE) (PHONES)				
		< COIL >				
L851	1-410-397-21	FERRITE BEAD INDUCTOR				
		< TRANSISTOR >				
Q811	8-729-231-55	TRANSISTOR 2SC2878-AB				
Q821	8-729-231-55	TRANSISTOR 2SC2878-AB				
		< RESISTOR >				
R811	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R812	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R813	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R814	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R815	1-216-810-11	METAL CHIP	120	5%	1/16W	
R816	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R821	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R822	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R823	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R824	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R825	1-216-810-11	METAL CHIP	120	5%	1/16W	
R826	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
		< VARIABLE RESISTOR >				
RV851	1-225-586-11	RES, VAR, CARBON 20K/20K (PHONE LEVEL)				

****

Ref. No.	Part No.	Description				Remarks
	1-675-724-11	INIT/COUNT SW BOARD				
		******************				

INT/COUNT SW	IN SW	LED	LOAD MOTOR	MAIN

Ref. No.	Part No.	Description				Remarks
		< SWITCH >				
S705	1-771-264-11	SWITCH, PUSH(DETECTION)(1 KEY) (INIT)				
S706	1-771-264-11	SWITCH, PUSH(DETECTION)(1 KEY) (COUNT)				
**						
	1-675-723-11	IN SW BOARD				
		***********				
		< CONNECTOR >				
* CN710	1-568-941-11	PIN, CONNECTOR 3P				
		< SWITCH >				
S703	1-771-218-11	SWITCH, MICRO (MID IN)				
S704	1-771-218-11	SWITCH, MICRO (IN)				
**						
	A-4676-879-A	LED BOARD, COMPLETE				
		*******************				
		< CAPACITOR >				
C750	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C762	1-162-962-11	CERAMIC CHIP	470PF	10%	50V	
		< CONNECTOR >				
* CN780	1-695-823-11	CONNECTOR, BOARD TO BOARD 8P				
		< DIODE >				
D751	8-719-057-29	DIODE SML78423C-TP15 (DISC 1)				
D752	8-719-057-29	DIODE SML78423C-TP15 (DISC 2)				
D753	8-719-057-29	DIODE SML78423C-TP15 (DISC 3)				
D754	8-719-057-29	DIODE SML78423C-TP15 (DISC 4)				
D755	8-719-057-29	DIODE SML78423C-TP15 (DISC 5)				
		< IC >				
IC750	8-759-366-45	IC NJU3713G(TE2)				
		< RESISTOR >				
R701	1-216-813-11	METAL CHIP	220	5%	1/16W	
R702	1-216-815-11	METAL CHIP	330	5%	1/16W	
R703	1-216-817-11	METAL CHIP	470	5%	1/16W	
R704	1-216-819-11	METAL CHIP	680	5%	1/16W	
R705	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R706	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R707	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R708	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R709	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R760	1-216-809-11	METAL CHIP	100	5%	1/16W	
R761	1-216-809-11	METAL CHIP	100	5%	1/16W	
R762	1-216-809-11	METAL CHIP	100	5%	1/16W	
R763	1-216-809-11	METAL CHIP	100	5%	1/16W	
R771	1-216-813-11	METAL CHIP	220	5%	1/16W	
R772	1-216-813-11	METAL CHIP	220	5%	1/16W	
R773	1-216-813-11	METAL CHIP	220	5%	1/16W	
R774	1-216-813-11	METAL CHIP	220	5%	1/16W	
R775	1-216-813-11	METAL CHIP	220	5%	1/16W	
R781	1-216-813-11	METAL CHIP	220	5%	1/16W	
R782	1-216-813-11	METAL CHIP	220	5%	1/16W	
R783	1-216-813-11	METAL CHIP	220	5%	1/16W	
R784	1-216-813-11	METAL CHIP	220	5%	1/16W	
R785	1-216-813-11	METAL CHIP	220	5%	1/16W	

Ref. No.	Part No.	Description				Remarks
		< SWITCH >				
S700	1-762-875-21	SWITCH, KEYBOARD (DISC 1)				
S701	1-762-875-21	SWITCH, KEYBOARD (DISC 1 ⏏)				
S702	1-762-875-21	SWITCH, KEYBOARD (DISC 2)				
S703	1-762-875-21	SWITCH, KEYBOARD (DISC 2 ⏏)				
S704	1-762-875-21	SWITCH, KEYBOARD (DISC 3)				
S705	1-762-875-21	SWITCH, KEYBOARD (DISC 3 ⏏)				
S706	1-762-875-21	SWITCH, KEYBOARD (DISC 4)				
S707	1-762-875-21	SWITCH, KEYBOARD (DISC 4 ⏏)				
S708	1-762-875-21	SWITCH, KEYBOARD (DISC 5)				
S709	1-762-875-21	SWITCH, KEYBOARD (DISC 5 ⏏)				
**						
	1-675-728-11	LOAD MOTOR BOARD				
		****************				
		< CAPACITOR >				
C703	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C704	1-126-964-11	ELECT	10uF	20%	50V	
C705	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C712	1-162-306-11	CERAMIC	0.01uF	30%	16V	
		< CONNECTOR >				
* CN713	1-568-954-11	PIN, CONNECTOR 5P				
		< DIODE >				
D702	8-719-109-85	DIODE RD5.1ESB2				
		< IC >				
IC702	8-759-633-65	IC M54641L				
		< RESISTOR >				
R703	1-249-411-11	CARBON	330	5%	1/4W	
R704	1-249-401-11	CARBON	47	5%	1/4W	F
**						
	A-4676-878-A	MAIN BOARD, COMPLETE				
		*******************				
	7-685-546-19	SCREW +BTP 3X8 TYPE2 N-S				
		< CAPACITOR >				
C9	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C11	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C12	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C19	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C20	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V	
C34	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C37	1-126-960-11	ELECT	1uF	20%	50V	
C41	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C58	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C74	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C76	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C100	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C111	1-136-356-11	MYLAR	470PF	5%	50V	
C112	1-119-800-11	ELECT	100uF	20%	25V	
C113	1-119-800-11	ELECT	100uF	20%	25V	
C118	1-119-800-11	ELECT	100uF	20%	25V	
C170	1-119-800-11	ELECT	100uF	20%	25V	
C171	1-137-503-11	MYLAR	0.0001uF	5%	50V	
C172	1-136-287-11	MYLAR	0.0047uF	5%	50V	

MAIN

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
C173	1-137-365-11	MYLAR	0.0015uF	5%	50V	C492	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C174	1-128-201-11	ELECT	100uF	20%	50V	C505	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C175	1-136-356-11	MYLAR	470PF	5%	50V	C517	1-135-667-91	ELECT	220uF		10V
C211	1-136-356-11	MYLAR	470PF	5%	50V	C518	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C212	1-119-800-11	ELECT	100uF	20%	25V	C520	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C213	1-119-800-11	ELECT	100uF	20%	25V	C521	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C218	1-119-800-11	ELECT	100uF	20%	25V	C530	1-135-667-91	ELECT	220uF		10V
C270	1-119-800-11	ELECT	100uF	20%	25V	C531	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C271	1-137-503-11	MYLAR	0.0001uF	5%	50V	C534	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C272	1-136-287-11	MYLAR	0.0047uF	5%	50V	C535	1-135-667-91	ELECT	220uF		10V
C273	1-137-365-11	MYLAR	0.0015uF	5%	50V	C539	1-135-667-91	ELECT	220uF		10V
C274	1-128-201-11	ELECT	100uF	20%	50V	C541	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C275	1-136-356-11	MYLAR	470PF	5%	50V	C551	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C300	1-135-748-11	ELECT	4700uF		35V	C552	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C301	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C553	1-216-864-11	METAL CHIP	0	5%	1/16W
C303	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C554	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C310	1-135-748-11	ELECT	4700uF		35V	C555	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C311	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C556	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C313	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C602	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C321	1-135-710-91	ELECT	220uF		16V	C604	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C322	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C606	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C326	1-135-710-91	ELECT	220uF		16V	C611	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C327	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C612	1-127-718-91	ELECT	100uF		10V
C331	1-135-710-91	ELECT	220uF		16V	C613	1-136-165-00	FILM	0.1uF	5%	50V
C332	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C617	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C336	1-135-710-91	ELECT	220uF		16V	C620	1-104-645-11	CERAMIC	1uF	20%	50V
C337	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C621	1-136-165-00	FILM	0.1uF	5%	50V
C350	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C630	1-216-864-11	METAL CHIP	0	5%	1/16W
C400	1-126-939-11	ELECT	10000uF	20%	16V	C631	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C401	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C632	1-127-718-91	ELECT	100uF		10V
C403	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C641	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C404	1-126-926-11	ELECT	1000uF	20%	10V	C642	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C410	1-126-939-11	ELECT	10000uF	20%	16V	C643	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C411	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C650	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C413	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C651	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C414	1-126-926-11	ELECT	1000uF	20%	10V	C652	1-127-718-91	ELECT	100uF		10V
C420	1-135-710-91	ELECT	220uF		16V	C661	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C421	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C662	1-136-165-00	FILM	0.1uF	5%	50V
C423	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C670	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C424	1-135-667-91	ELECT	220uF		10V	C671	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C430	1-128-548-11	ELECT	4700uF	20%	25V	C672	1-127-718-91	ELECT	100uF		10V
C431	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C680	1-104-645-11	CERAMIC	1uF	20%	50V
C433	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C681	1-104-645-11	CERAMIC	1uF	20%	50V
C434	1-126-926-11	ELECT	1000uF	20%	10V	C910	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C441	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C911	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C443	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C912	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C444	1-126-926-11	ELECT	1000uF	20%	10V	C913	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C450	1-128-548-11	ELECT	4700uF	20%	25V	C916	1-131-679-31	FILM	0.01uF	5%	50V
C451	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C917	1-131-679-31	FILM	0.01uF	5%	50V
C453	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C918	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C454	1-126-926-11	ELECT	1000uF	20%	10V	C919	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C460	1-128-576-11	ELECT	100uF	20%	63V	C920	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C463	1-165-319-11	CERAMIC CHIP	0.1uF		50V	C921	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C465	1-126-967-11	ELECT	47uF	20%	50V						
C471	1-126-964-11	ELECT	10uF	20%	25V			**< CONNECTOR >**			
C472	1-104-657-91	ELECT	47uF	20%	25V						
						CN1	1-784-367-11	CONNECTOR, FFC/FPC 8P			
C476	1-164-156-11	CERAMIC CHIP	0.1uF		25V	CN630	1-784-370-21	CONNECTOR, FFC/FPC 11P			
C480	1-164-156-11	CERAMIC CHIP	0.1uF		25V	CN640	1-784-376-11	CONNECTOR, FFC/FPC 17P			
C481	1-162-974-11	CERAMIC CHIP	0.01uF		50V	* CN641	1-568-954-11	PIN, CONNECTOR 5P			
C490	1-126-935-11	ELECT	470uF		16V	CN660	1-793-991-11	CONNECTOR, FFC/FPC 23P			

Ref. No.	Part No.	Description	Remarks
CN671	1-778-692-11	CONNECTOR, FFC/FPC 21P	
* CN690	1-564-709-11	PIN, CONNECTOR (SMALL TYPE) 7P	
CN910	1-691-768-11	PLUG (MICRO CONNECTOR) 6P	
CN920	1-691-767-11	PLUG (MICRO CONNECTOR) 5P	

< DIODE >

Ref. No.	Part No.	Description	Remarks
D111	8-719-988-61	DIODE 1SS355TE-17	
D112	8-719-988-61	DIODE 1SS355TE-17	
D181	8-719-820-05	DIODE 1SS181	
D211	8-719-988-61	DIODE 1SS355TE-17	
D212	8-719-988-61	DIODE 1SS355TE-17	
D301	8-719-200-02	DIODE 10E-2	
D302	8-719-200-02	DIODE 10E-2	
D303	8-719-085-36	DIODE 11EQS04-TB5	
D310	8-719-988-61	DIODE 1SS355TE-17	
D311	8-719-200-02	DIODE 10E-2	
D312	8-719-200-02	DIODE 10E-2	
D313	8-719-085-36	DIODE 11EQS04-TB5	
D401	8-719-085-36	DIODE 11EQS04-TB5	
D402	8-719-085-36	DIODE 11EQS04-TB5	
D403	8-719-085-36	DIODE 11EQS04-TB5	
D404	8-719-085-36	DIODE 11EQS04-TB5	
D411	8-719-200-02	DIODE 10E-2	
D412	8-719-200-02	DIODE 10E-2	
D426	1-216-295-91	CONDUCTOR, CHIP (2012)	
D431	8-719-200-02	DIODE 10E-2	
D432	8-719-200-02	DIODE 10E-2	
D433	8-719-200-02	DIODE 10E-2	
D434	8-719-200-02	DIODE 10E-2	
D451	8-719-200-02	DIODE 10E-2	
D452	8-719-200-02	DIODE 10E-2	
D453	8-719-200-02	DIODE 10E-2	
D454	8-719-200-02	DIODE 10E-2	
D461	8-719-200-02	DIODE 10E-2	
D462	8-719-422-23	DIODE MA8047	
D471	8-719-988-61	DIODE 1SS355TE-17	
D472	8-719-988-61	DIODE 1SS355TE-17	
D473	8-719-988-61	DIODE 1SS355TE-17	
D491	8-719-200-02	DIODE 10E-2	
D492	8-719-200-02	DIODE 10E-2	
D493	8-719-420-92	DIODE MA8051-M-TX	

< GROUND TERMINAL >

Ref. No.	Part No.	Description	Remarks
EP910	1-537-771-21	TERMINAL BOARD, GROUND	

< IC >

Ref. No.	Part No.	Description	Remarks
IC1	6-802-234-01	IC uPD70F3033AYGF-M04-3BA	
IC100	8-759-643-31	IC BR24C02FV-WE2	
IC300	8-759-605-00	IC M5F78M07L	
IC310	8-759-604-95	IC M5F79M07L	
IC320	8-759-712-02	IC NJM2114D	
IC330	8-759-712-02	IC NJM2114D	
IC340	8-759-712-02	IC NJM2114D	
IC400	8-759-450-47	IC BA05T	
IC410	8-759-450-47	IC BA05T	
IC420	8-759-604-35	IC M5F78M05L	
IC430	8-759-231-55	IC TA7808S	
IC440	8-759-071-48	IC TA7807S	
IC450	8-759-231-55	IC TA7808S	
IC460	8-759-633-42	IC M5293L	

Ref. No.	Part No.	Description	Remarks
IC470	8-759-387-77	IC TC7WU04F-TE12L	
IC480	8-759-598-06	IC S-80942ANMP-DD6-T2	
IC500	6-701-843-01	IC CXD9692R	
IC611	6-600-000-01	IC GP1FA512RZB (OPTICAL IN)	
IC631	8-759-267-86	IC SN74HC00ANSR	
IC651	6-600-001-01	IC GP1FA512TZC (OPTICAL OUT)	
IC671	8-759-387-77	IC TC7WU04F-TE12L	

< JACK >

Ref. No.	Part No.	Description	Remarks
J310	1-784-430-11	JACK, PIN 4P (ANALOG IN/OUT)	
J621	1-784-432-11	JACK, PIN 1P (COAXIAL IN)	
J661	1-784-689-11	JACK, PIN 1P (COAXIAL OUT)	

< COIL >

Ref. No.	Part No.	Description		Remarks
L517	1-216-295-91	SHORT CHIP	0	
L519	1-216-295-91	SHORT CHIP	0	
L520	1-216-295-91	SHORT CHIP	0	
L536	1-216-295-91	SHORT CHIP	0	
L539	1-216-295-91	SHORT CHIP	0	
L605	1-216-296-11	SHORT CHIP	0	
L606	1-216-296-11	SHORT CHIP	0	
L611	1-412-056-11	INDUCTOR	4.7uH	
L617	1-216-296-11	SHORT CHIP	0	
L619	1-216-295-91	SHORT CHIP	0	
L636	1-216-295-91	SHORT CHIP	0	
L651	1-412-056-11	INDUCTOR	4.7uH	
L652	1-414-235-22	FERRITE	0uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remarks
Q181	8-729-231-55	TRANSISTOR 2SC2878-AB	
Q281	8-729-231-55	TRANSISTOR 2SC2878-AB	
Q310	8-729-922-37	TRANSISTOR 2SD2144S-UVW	
Q380	8-729-015-74	TRANSISTOR UN5111	

< RESISTOR >

Ref. No.	Part No.	Description				Remarks
R3	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R6	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R12	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R13	1-216-864-11	METAL CHIP	0	5%	1/16W	
R15	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R18	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R19	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R20	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R21	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R25	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R46	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R63	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R64	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R66	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R72	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R73	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R87	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R88	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R107	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R111	1-249-588-91	CARBON	33K	5%	1/4W	
R112	1-249-955-11	CARBON	22K	5%	1/4W	
R113	1-247-887-00	CARBON	220K	5%	1/4W	
R115	1-249-891-11	CARBON	47	5%	1/4W	
R170	1-249-947-11	CARBON	10K	5%	1/4W	
R171	1-249-405-11	CARBON	100	5%	1/4W	F

MAIN	OUT SW	POWER SW

Ref. No.	Part No.	Description			Remarks
R172	1-249-923-11	CARBON	1K	5%	1/4W
R173	1-249-925-11	CARBON	1.2K	5%	1/4W
R174	1-249-923-11	CARBON	1K	5%	1/4W
R175	1-249-923-11	CARBON	1K	5%	1/4W
R176	1-249-469-11	CARBON	100K	5%	1/4W
R177	1-249-919-11	CARBON	680	5%	1/4W
R178	1-247-706-11	CARBON	330	5%	1/4W F
R181	1-249-947-11	CARBON	10K	5%	1/4W
R211	1-249-588-91	CARBON	33K	5%	1/4W
R212	1-249-955-11	CARBON	22K	5%	1/4W
R213	1-247-887-00	CARBON	220K	5%	1/4W
R215	1-249-891-11	CARBON	47	5%	1/4W
R270	1-249-947-11	CARBON	10K	5%	1/4W
R271	1-249-405-11	CARBON	100	5%	1/4W F
R272	1-249-923-11	CARBON	1K	5%	1/4W
R273	1-249-925-11	CARBON	1.2K	5%	1/4W
R274	1-249-923-11	CARBON	1K	5%	1/4W
R275	1-249-923-11	CARBON	1K	5%	1/4W
R276	1-249-469-11	CARBON	100K	5%	1/4W
R277	1-249-919-11	CARBON	680	5%	1/4W
R278	1-247-706-11	CARBON	330	5%	1/4W F
R281	1-249-947-11	CARBON	10K	5%	1/4W
⚠ R305	1-217-637-00	FUSIBLE	1	5%	1/4W
R310	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R311	1-216-841-11	METAL CHIP	47K	5%	1/16W
⚠ R315	1-217-639-51	FUSIBLE	2.2	5%	1/4W
R381	1-216-845-11	METAL CHIP	100K	5%	1/16W
R461	1-216-837-11	METAL CHIP	22K	5%	1/16W
R462	1-216-845-11	METAL CHIP	100K	5%	1/16W
R463	1-216-813-11	METAL CHIP	220	5%	1/16W
R464	1-216-813-11	METAL CHIP	220	5%	1/16W
R471	1-216-809-11	METAL CHIP	100	5%	1/16W
R472	1-202-925-91	RES-CHIP	1.6K	5%	1/10W
R473	1-216-821-11	METAL CHIP	1K	5%	1/16W
R474	1-216-833-11	METAL CHIP	10K	5%	1/16W
R475	1-216-840-11	METAL CHIP	39K	5%	1/16W
R476	1-216-853-11	METAL CHIP	470K	5%	1/16W
R477	1-216-821-11	METAL CHIP	1K	5%	1/16W
R480	1-216-841-11	METAL CHIP	47K	5%	1/16W
R491	1-216-821-11	METAL CHIP	1K	5%	1/16W
R500	1-216-864-11	METAL CHIP	0	5%	1/16W
R504	1-216-864-11	METAL CHIP	0	5%	1/16W
R506	1-216-809-11	METAL CHIP	100	5%	1/16W
R507	1-216-809-11	METAL CHIP	100	5%	1/16W
R508	1-216-809-11	METAL CHIP	100	5%	1/16W
R509	1-216-809-11	METAL CHIP	100	5%	1/16W
R510	1-216-809-11	METAL CHIP	100	5%	1/16W
R511	1-216-809-11	METAL CHIP	100	5%	1/16W
R513	1-414-760-21	FERRITE	0		
R514	1-216-864-11	METAL CHIP	0	5%	1/16W
R515	1-216-864-11	METAL CHIP	0	5%	1/16W
R516	1-216-864-11	METAL CHIP	0	5%	1/16W
R520	1-216-815-11	METAL CHIP	330	5%	1/16W
R521	1-216-857-11	METAL CHIP	1M	5%	1/16W
R526	1-216-833-11	METAL CHIP	10K	5%	1/16W
R540	1-216-994-11	RES-CHIP	13K	5%	1/10W
R544	1-216-864-11	METAL CHIP	0	5%	1/16W
R550	1-216-864-11	METAL CHIP	0	5%	1/16W
R611	1-216-809-11	METAL CHIP	100	5%	1/16W
R613	1-216-833-11	METAL CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R619	1-216-813-11	METAL CHIP	220	5%	1/16W
R620	1-218-285-11	RES-CHIP	75	5%	1/10W
R621	1-216-809-11	METAL CHIP	100	5%	1/16W
R623	1-216-845-11	METAL CHIP	100K	5%	1/16W
R626	1-216-817-11	METAL CHIP	470	5%	1/16W
R630	1-216-864-11	METAL CHIP	0	5%	1/16W
R636	1-216-81311	METAL CHIP	220	5%	1/16W
R638	1-216-864-11	METAL CHIP	0	5%	1/16W
R661	1-216-807-11	METAL CHIP	68	5%	1/16W
R662	1-216-813-11	METAL CHIP	220	5%	1/16W
R663	1-216-806-11	RES-CHIP	56	5%	1/10W
R664	1-216-809-11	METAL CHIP	100	5%	1/16W
R1087	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1088	1-216-833-11	METAL CHIP	10K	5%	1/16W

< NETWORK >

Ref. No.	Part No.	Description
RB43	1-236-908-11	RES, CHIP NETWORK 10K (3216)
RB47	1-236-908-11	RES, CHIP NETWORK 10K (3216)
RB51	1-236-908-11	RES, CHIP NETWORK 10K (3216)
RB54	1-236-908-11	RES, CHIP NETWORK 10K (3216)
RB68	1-236-908-11	RES, CHIP NETWORK 10K (3216)
RB77	1-233-418-11	RES, CHIP NETWORK 3.3K (3216)
RB90	1-236-908-11	RES, CHIP NETWORK 10K (3216)

< RELAY >

Ref. No.	Part No.	Description
RY310	1-515-622-11	RELAY

< TRANSFORMER >

Ref. No.	Part No.	Description
T661	1-409-594-11	COIL (WITH CORE)

< VIBRATOR >

Ref. No.	Part No.	Description
X38	1-795-721-21	VIBRATOR, CERAMIC (20MHz)

****

	1-675-725-11	OUT SW BOARD

****

< CONNCTOR >

Ref. No.	Part No.	Description
* CN709	1-568-943-11	PIN, CONNECTOR 5P

< SWITCH >

Ref. No.	Part No.	Description
S701	1-771-218-11	SWITCH, MICRO (MID OUT)
S702	1-771-218-11	SWITCH, MICRO (LID)
S708	1-771-218-11	SWITCH, MICRO (OUT)

****

	1-684-811-11	POWER SW BOARD

****

< CAPACITOR >

Ref. No.	Part No.	Description			
⚠ C921	1-113-920-11	CERAMIC	0.002uF	20%	250V

< CONNECTOR >

Ref. No.	Part No.	Description
* CN920	1-580-230-31	PIN, CONNECTOR (PC BOARD) 2P
CN921	1-769-745-21	LEAD (WITH CONNECTOR) (2 CORE)

< SWITCH >

Ref. No.	Part No.	Description
⚠ S921	1-572-267-51	SWITCH, PUSH (AC POWER)(1 KEY) (POWER)

****

> The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
> Replace only with part number specified.

RCD-W222ES

| | | | RM | | SENSOR | | SENSOR 2 | |

Ref. No.	Part No.	Description			Remarks
	1-684-813-11	RM BOARD			
		********			
		< CAPACITOR >			
C741	1-164-159-11	CERAMIC	0.1uF		50V
C742	1-124-584-00	ELECT	100uF	20%	10V
		< IC >			
IC740	6-600-107-01	IC GP1UM27SXK			
		< RESISTOR >			
R741	1-247-807-31	CARBON	100	5%	1/4W
R742	1-249-401-11	CARBON	47	5%	1/4W F

****

Ref. No.	Part No.	Description			Remarks
	1-675-726-11	SENSOR BOARD			
		************			
		< CONNECTOR >			
CN708	1-506-481-11	PIN, CONNECTOR 2P			
		< DIODE >			
D704	8-719-055-84	DIODE GL528VS1			
		< RESISTOR >			
R711	1-249-415-11	CARBON	680	5%	1/4W F

****

Ref. No.	Part No.	Description	Remarks
	1-675-727-11	SENSOR 2 BOARD	
		**************	
	4-964-461-02	HOLDER (SENSOR)	
		< TRANSISTOR >	
Q703	8-729-921-53	PHOTO TRANSISTOR PT483F1	

****

Ref. No.	Part No.	Description	Remarks
		MISCELLANEOUS	
		*************	
67	1-823-923-11	WIRE (FLAT TYPE) (21 CORE)	
103	1-823-922-11	WIRE (FLAT TYPE) (11 CORE)	
106	1-823-925-11	WIRE (FLAT TYPE) (17 CORE)	
107	1-823-924-11	WIRE (FLAT TYPE) (23 CORE)	
⚠108	1-790-154-31	CORD, POWER	
605	1-782-817-11	WIRE (FLAT TYPE) (16 CORE)	
* 658	1-452-958-11	MAGNET (CHUCKING)	
⚠669	8-583-104-01	OPTICAL PICK-UP KRM-220CAA	
670	1-823-651-11	CABLE, FLEXIBLE FLAT (32 CORE)	
M701	X-4950-341-1	MOTOR (CLAMP) ASSY (ELEVATOR UP/DOWN)	
M702	X-4950-342-1	MOTOR (LOADING) ASSY	
M903	A-4735-557-A	MOTOR ASSY	
S707	1-418-045-01	ENCODER, ROTARY (DISC TRAY ADDRESS DET)	
⚠T901	1-437-791-11	TRANSFORMER, POWER	
⚠T902	1-437-792-11	TRANSFORMER, POWER	

****

Ref. No.	Part No.	Description	Remarks
		ACCESSORIES	
		***********	
	1-477-038-11	REMOTE COMMANDER (RM-R51)	
	1-791-732-11	CORD, CONNECTION	
	4-240-491-11	MANUAL, INSTRUCTION (ENGLISH)	
	4-981-643-01	COVER, BATTERY (For RM-R51)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

REVISION HISTORY

Clicking the version allows you to jump to the revised page.
Also, clicking the version at the upper right on the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.0	2002.09	New